

## LOOKING BACK OVER THE 'MISSA L'ARDANT DESIR': DOUBLE SIGNATURES AND UNUSUAL SIGNS IN SOURCES OF FIFTEENTH-CENTURY MUSIC

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IN AN ARTICLE WITTILY ENTITLED 'The End of the Ars Subtilior' David Fallows observes that music theorists continue to discuss, and composers occasionally use, notational and stylistic elements associated with the *ars subtilior* over the course of the fifteenth century.<sup>1</sup> While it is agreed that the years roughly between 1380 and 1415 witness the apogee of the so-called *ars subtilior* style on either side of the Alps, Fallows argues for the existence of continuities in musical and notational practices, offering up a foil to any attempt to periodize this style. For music historians, this situation is not surprising in the light of later musical parallels like, for example, the final flowering of the North

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The following abbreviations are used:

|                  |   |
|------------------|---|
| Aosta 15         | Aosta, Seminario Maggiore, MS 15 ( <i>olim</i> Al D 19)   |
| BL               | London, British Library   |
| Bologna Q 15     | Bologna, Museo Internazionale e Biblioteca della Musica, Q 15   |
| Boverio          | Turin, Biblioteca Universitaria, MS T.III.2   |
| Cambrai 11       | Cambrai, Médiathèque Municipale, MS 11  |
| Codex Chantilly  | Chantilly, Bibliothèque du Château de Chantilly, MS 564   |
| CS               | Vatican City, Biblioteca Apostolica Vaticana, Cappella Sistina  |
| DIAMM            | Digital Image Archive of Medieval Music, <www.diamm.ac.uk>  |
| Modena A         | Modena, Biblioteca estense universitaria, α.M.5.24  |
| Munich           | Munich, Bayerische Staatsbibliothek   |
| Lucca Choirbook  | Lucca, Archivio di Stato, MS 238; Lucca, Archivio Arcivescovile, MS 97; Pisa, Archivio Arcivescovile, Biblioteca Maffi, Cartella 11/III |
| Old Hall MS      | London, British Library, Add. MS 57950  |
| Oxford 213       | Oxford, Bodleian Library, Canon. Misc. 213  |
| Paris 22069      | Paris, Bibliothèque nationale de France, n.a.f. 22069   |
| St Emmeram Codex | Munich, Bayerische Staatsbibliothek, Clm. 14274   |
| SP B 80          | Vatican City, Biblioteca Apostolica Vaticana, MS San Pietro B 80  |
| Trent            | Trento, Museo Provinciale d'Arte, Castello del Buonconsiglio  |
| Turin J.II.9     | Turin, Biblioteca Universitaria, MS J.II.9  |

<sup>1</sup> David Fallows, 'The End of the Ars Subtilior', *Basler Jahrbuch für historische Musikpraxis*, 20 (1996), 21–40 at 23. Fallows is playing on the title of the landmark article in which the term *ars subtilior* was put forward for the first time to describe the complex style found in sources from the early 15th c., namely Ursula Günther, 'Das Ende der ars nova', *Die Musikforschung*, 16 (1963), 105–20. For a more recent discussion of the term *ars subtilior*, see Anne Stone, 'Che cosa c'è di più sottile riguardo l'ars subtilior', *Rivista italiana di musicologia*, 31 (1996), 3–31.

German contrapuntal style in the hands of Bach contemporaneous with the development of the early Classical symphony by younger composers such as G. B. Sammartini and Johann Stamitz. Fallows invites further exploration of stylistic and notational continuities in the fifteenth century. In this article I take up the second part of his challenge by considering further evidence for the use of unusual mensuration signs in sources from well into the second half of the fifteenth century.

While it is evident that musicians in fifteenth-century western Europe achieved a degree of stability in the notation of measured polyphonic music compared to the notational practices of the previous two centuries, researchers continue to discover diverse notational processes in surviving sources. By notational processes I refer in general to the formation and significance of written signs in musical notation, thereby encompassing both notational palaeography and notational semiology. Mensuration signs, indicating the division of musical time into discrete units, have been one such area of continued enquiry. In the past thirty years or so our understanding of these signs in fifteenth-century notation has changed notably with regard to diminution, so-called 'cut signs', and the relation of various signs to one another in the measuring of musical time.<sup>2</sup> Surviving sources continue to challenge our knowledge of mensural notation and, to some extent, a tendency to boil down complexes of local scribal practices into a historical narrative of West European notational development. In this article I explore the practice of using unusual mensuration signs as signatures (several of which have not been discussed before now) to indicate proportional relationships in musical sources from the period *c.*1400 to *c.*1475. In surveying this rich and complex period in Western music history, my task is not to argue for continuity in notational practice. Rather it is to explore those discontinuities that manifest themselves in the face of apparent notational continuities in sources datable to the first three quarters of the fifteenth century. This account therefore augments and in some ways complicates scholarship's overall picture of fifteenth-century notational practice.

#### THE *CONFITEOR* FROM THE *MISSA L'ARDANT DESIR*

The catalyst for this study was my collaboration in 2001 with Rex Eakins on a new transcription of a *Confiteor* from the anonymous *Missa L'Ardant desir*. The sole witness of this polyphonic mass is the manuscript Cappella Sistina 51 of the Biblioteca Apostolica Vaticana (CS 51; see Pl. 1).<sup>3</sup> Rob Wegman was responsible for first drawing

<sup>2</sup> Studies of 15th-c. mensural practice and mensuration signs can be divided into those concerned with exploring codified practices in music theory and those focused on the empirical investigation of mensuration signs in sources (notwithstanding some consideration of theoretical literature). Anna Maria Busse Berger's *Mensuration and Proportion Signs: Origins and Evolution* (Oxford, 1993) remains an important survey and discussion of the theory of mensuration and proportion signs, and encompasses some of their uses. On the 15th- and 16th-c. codification of mensural practice and mensuration signs, also see Anna Maria Busse Berger, 'The Relationship of Perfect and Imperfect Time in Italian Theory of the Renaissance', *Early Music History*, 5 (1985), 1–28; Eunice Schroeder, 'The Stroke Comes Full Circle:  $\phi$  and  $\phi$  in Writings on Music, ca. 1450–1540', *Musica Disciplina*, 36 (1982), 119–66; Rob C. Wegman, 'What is *Acceleratio mensurae*?', *Music & Letters*, 73 (1992), 515–24; Alexander Blachly, 'Reading Tinctoris for Guidance on Tempo', in Paula Higgins (ed.), *Antoine Busnoys: Method, Meaning, and Context in Late Medieval Music* (Oxford, 1999), 399–427; Ruth I. DeFord, 'On Diminution and Proportion in Fifteenth-Century Music Theory', *Journal of the American Musicological Society*, 58 (2005), 1–67. Recent empirical investigations of the use of cut signs in musical sources are discussed later in this article.

<sup>3</sup> *An Editorial Transnotation of the Manuscript Capella Sistina 51, Biblioteca Apostolica Vaticana, Città del Vaticano: Liber Missarum*, ed. Rex Eakins (Collected Works, 17/3; Ottawa, 2001), p. viii. For a detailed discussion of CS 51 and its sister manuscript CS 14, see Adalbert Roth, *Studien zum frühen Repertoire der päpstlichen Kapelle unter dem Pontifikat Sixtus' IV. (1471–1484)* (Vatican City, 1991), *passim*; also *Census-Catalogue of Manuscript Sources of Polyphonic Music 1400–1550*, iv: *V–Z and Supplement*, ed. Herbert Kellman (Renaissance Manuscript Studies, 1; Neuhausen-Stuttgart, 1988), 28 and 51–2. The *Missa L'Ardant desir* occurs in what is thought to be the oldest of three layers in CS 51. Roth concluded that

widespread attention to the *Missa L'Ardant desir* thanks to an article published in this journal in which he explored compositional and notational processes, discussed issues of attribution, and presented several short transcriptions of selected portions, including the first part and later portions of the *Confiteor*.<sup>4</sup> As I will demonstrate, my reading (and indeed Eakins's reading) of the first sixteen breves of the *Confiteor* of the *Missa L'Ardant desir*, shown as a diplomatic transcription in Ex. 1, differs in a number of ways from Wegman's.<sup>5</sup>

My solution, derived from empirically tested principles, improves upon Wegman's version insofar as it is more internally consistent and involves fewer changes to the manuscript reading.<sup>6</sup> The reading shown here contains only one emendation: the first two minims in b. 10 of the Alto are read a third higher than they appear in the manuscript on account of the dissonance produced by the second minim (originally *d*, now *f*) in the original reading.<sup>7</sup> This trivial emendation is plausible and compares favourably with the complex of three emendations that Wegman proposes for Alto and Bass in bb. 10–11 of his reading of the *Confiteor*. As further evidence in support of the proposed reading in bb. 10–11, the counterpoint formed by the Alto and Bass in relation to the cantus firmus mirrors that found in the corresponding section of the first Kyrie of the same mass (see Ex. 2).<sup>8</sup>

the earliest layers of CS 51 were copied in the mid-1470s at Naples (*Studien*, 66, 452, and 486). In an unpublished paper 'The Winds of Fortune: A New View of the Provenance of Capella Sistina Manuscripts 14 and 51' delivered during 1991 at Oxford and Chicago, Flynn Warmington proposed that CS 14 and 51 were copied at Florence; see Adalbert Roth, 'Napoli o Firenze? Dove sono stati compilati i manoscritti CS 14 e CS 51?', in Piero Gargiulo (ed.), *La musica a Firenze al tempo di Lorenzo il Magnifico: Congresso internazionale di studi, Firenze 15–17 giugno 1992* (Florence, 1993), 69–100. Also included in the same copying layer in CS 51 are the *Missa O crux lignum triumphale* by Busnoys (fos. 104<sup>v</sup>–113<sup>r</sup>) and the anonymous *Missa D'ung aultre amer* (fos. 113<sup>v</sup>–122<sup>r</sup>). Of interest are Roth's conclusions concerning the third fascicle, where, on the basis of ink pigments, he concludes that the *Missa D'ung aultre amer* was copied before *L'Ardant desir* and *O crux lignum triumphale*; Roth, *Studien*, 185–7. I am grateful to Dr Eakins for providing this summary of CS 51's contents, copying layers, and relationship to CS 14.

<sup>4</sup> Rob C. Wegman, 'Another Mass by Busnoys?', *Music & Letters*, 71 (1990), 1–19 at 15. Following the earlier suggestion by Joseph Llorens (*Capellae Sixtinae Codices musicis notis instructi sive manu scripti sive praelo excussi* (Vatican City, 1960), 104), Wegman tentatively attributes the *Missa L'Ardant desir* to Antoine Busnoys; also see Wegman, 'Petrus de Domarto's *Missa Spiritus almus* and the Early History of the Four-Voice Mass in the Fifteenth Century', *Early Music History*, 10 (1991), 235–303 at 266–70. On the attribution to Busnoys, a flurry of correspondence ensued: see Richard F. Taruskin and Rob C. Wegman, 'Correspondence: The Missa "L'Ardant Desir"', *Music & Letters*, 71 (1990), 631–5; Richard F. Taruskin and Rob C. Wegman, 'Correspondence: L'Ardant Redux', *Music & Letters*, 72 (1991), 347–50. For Wegman's retraction of his earlier attribution, see his 'Mensural Intertextuality in the Sacred Music of Antoine Busnoys', in Higgins (ed.), *Antoine Busnoys*, 175–214, esp. 201–2. Issues of attribution are not a concern here. The published transcription of the *Confiteor* appears in *An Editorial Transnotation*, ed. Eakins, iii. 123–5.

<sup>5</sup> In the opening in CS 51, the unlabelled Cantus is located at the top of the verso leaf; the Tenor is beneath the Cantus; the unlabelled Alto occurs at the top of the recto leaf and the Bass (labelled *Basis*) on the bottom right-hand side. Throughout the *Missa L'Ardant desir*, the Cantus, Alto, and Bass voices are provided with colourful Greek-based labels *ramalogia*, *pentonans*, *antiptongus*, *bariboans*, *epitroporosus*, and *tripibolizacus*: see Wegman, 'Another Mass by Busnoys?', 17; *An Editorial Transnotation*, ed. Eakins, pp. xxxv–xxxvi.

<sup>6</sup> Wegman proposes the following emendations: Alto b. 10, second minim: *d'* emended to *c'*; Bass b. 10, second semibreve: *f* emended to *e*; Bass, b. 11, semibreves *e–d* emended to *c–d*. His pitch emendations introduce parallel octaves between the Alto and Bass. See Wegman, 'Another Mass by Busnoys?', 14 n. 28. On Wegman's rendering of what I term double signatures and how it affects this passage rhythmically, see below at n. 15.

<sup>7</sup> Another possible reading of the Cantus bb. 8–9 is to read the minims of  $\text{C}$  equivalent to those in  $\text{C}$  and emend the semibreve *f* to a minim. Dr Eakins informed me in a private communication, 28 Feb. 2008, that the stem of a minim is omitted on four separate occasions in CS 51 when compared with concordant sources: fo. 31<sup>r</sup>, stave 2, note 5; fo. 125<sup>r</sup>, stave 4, note 9; fo. 130<sup>r</sup>, stave 1, note 15, and fo. 139<sup>r</sup>, stave 2, note 5. He also notes that Hand A, the hand responsible for copying the mass, is the copyist in every case. Eakins's edition of this mass does in fact read the  $\text{C}$  passage with minims equivalent to  $\text{C}$  and successfully avoids any emendation of note values or pitches, but is problematic in terms of the counterpoint generated by its reading of the passage governed by  $\text{D}$ .

<sup>8</sup> Also see *An Editorial Transnotation*, ed. Eakins, 66–8.

**C**

onfiteor vnum baptisma In Remissio  
nem peccato rum Et expecto resurrectio  
nem Mortuorum Et vitam  
venturi A  
men

**T**

Enor Confiteor vnum baptisma  
A men

PL. 1. Anon., *Confiteor* of the *Missa L'Ardant desir*, CS 51, fos. 98<sup>v</sup>–99<sup>r</sup> (diplomatic transcription)

**C**

Onfiteor vnum baptisma in re missio  
nem p̄cto rū et exspecto resurrectionem  
mortuorū Et vitam venturi seculi A  
me n

**B**

Asis Confiteor vnum baptisma In remissionem  
p̄cto Et exspecto resurrectionem  
Et vitam venturi seculi A  
me n

PL. 1. Continued

Ex. 1. Anon., *Confiteor* of the *Missa L'Ardant desir*, bb. 1–17

S  
A  
T  
B

Con - fi - te - or u - num bap - tis - ma in re - mi - si - o - nem pec - ca - to - rum Et ex - pec - to re - su - ma - ca - to - rum Et ex -

7  
13  
14

Unlike the imperfect time of the *Confiteor*, the mensuration of the cantus firmus in the first Kyrie is perfect time (○).<sup>9</sup> Despite this difference, the Kyrie's contrapuntal fabric from the end of b. 9 until the end of b. 10 is virtually identical in the lower three

<sup>9</sup> Throughout this article I use English forms of the names of the four basic mensurations as follows: perfect time with major prolation = *tempus perfectum prolationis majoris*; perfect time with minor prolation = *tempus perfectum prolationis minoris*; imperfect time with major prolation = *tempus imperfectum prolationis majoris*; imperfect time with minor prolation = *tempus imperfectum prolationis minoris*. Perfect time consists of breves containing three semibreves; imperfect time two semibreves; prolation, i.e. the division of the semibreve, is major or minor depending on whether a semibreve contains three or two minims respectively.

Ex. 2. Kyrie I of the *Missa L'Ardant desir*, bb, 7–13

7

Cf. *Confiteor*, Cantus, bb, 10–11

Cf. *Confiteor*, Cantus, bb, 13–14

Cf. *Confiteor*, A, T, Ct, bb, 9–11

Cf. *Confiteor*, Cantus, bb, 11–12





- (2) Coloration indicates a 3:2 (*sesquialtera*) relationship brought about either by imperfection or by proportion, contingent on the prevailing mensuration.
- (3) Semibreve equivalence is observed between  $\textcircled{C}$  and  $\textcircled{C}$ .<sup>11</sup>

The most unusual and interesting signs found in the Alto and Bass of the *Confiteor* consist of one mensuration sign placed on top of another. These signs have not been adequately explained up to now, thus a focus here upon their meaning and evidence of their use in earlier notation is warranted. They should not be confused with composite (*modus cum tempore*) signatures.<sup>12</sup> Nor should they be mistaken for the stacks of mensuration signs found at the beginning of the tenors of fifteenth-century motets that indicate successive mensural transformations of each repeat of a melody or the need to repeat a section of music.<sup>13</sup> Similarly, because they consist of two mensuration signs, sometimes with an added arabic numeral, and not a single mensuration sign accompanied by one or two arabic numerals, they do not fall into the category of composite signatures discussed by the music theorists from the second half of the fifteenth century.<sup>14</sup> For those reasons, these signs might be referred to as double signatures.

In relation to the double signatures in the *Missa L'Ardant desir*, Wegman states: 'I have been able to interpret the composite signatures logically and consistently only by assuming that the top signs apply to the first two notes of the music written under them, and the bottom signs to the remainder.'<sup>15</sup> He therefore reads in bar 8 of the Alto what can only be understood as a pair of diminished perfect longs governed by  $\textcircled{C}$  at the additional proportion of 6:l followed by a pair of imperfect diminished longs governed by  $\textcircled{C}$ . In bar 10 of the Bass he reads two semibreves under  $\textcircled{C}$  followed by a minim rest (added silently) and two minims (emended from semibreves, again silently) in a 3:2 proportion under  $\textcircled{C}$ . His reading of the first double signature in b. 6 of the Alto is identical in its substance to that shown in Ex. 1. A different interpretation is offered here. Double signatures indicate a proportion by combining two mensuration signs that each represent distinct quantities. The topmost sign also determines the mensuration for the following notes. The double signature consisting of simple mensuration signs  $\textcircled{C}$  and  $\textcircled{C}$  indicates a proportion at the minim. The use of a stroke to produce so-called cut signs  $\textcircled{C}$  and  $\textcircled{C}$  appears to require that the proportion operate at the semibreve level. Each mensuration sign, when used in a double signature in the *Confiteor*, effectively represents a quantity of semibreves or minims, such that  $\textcircled{C}$  equals three semibreves,  $\textcircled{C}$  equals two semibreves,  $\textcircled{C}$  equals six minims and  $\textcircled{C}$  equals four minims.

<sup>11</sup> Tinctoris reports various uses of  $\textcircled{C}$  to indicate *sesquialtera*, *sesquitercia*, and *dupla* in *Proportionale musices*, bk. 3, cap. 2; *Opera theoretica*, IIa: *Proportionale musices*, ed. Albert Seay (Corpus Scriptorum de Musica, 22; Neuhausen-Stuttgart, 1978), 46–7.

<sup>12</sup> On the theory of *modus cum tempore* signs, see Busse Berger, *Mensuration and Proportion Signs*, 20–3 and 148–63.

<sup>13</sup> While stacks of mensuration signs are regularly used to effect mensural transformations of motet tenors, they are also used to indicate non-proportional relationships between repetitions of sections of polyphonic masses and antiphons, as illustrated in the case of Binchois in Margaret Bent, 'The Use of Cut Signatures in Sacred Music by Binchois', in Andrew Kirkman and Dennis Slavin (eds.), *Binchois Studies* (Oxford, 2000), 277–312.

<sup>14</sup> Guilielmus Monachus, *De preceptis artis musicae compendiosus libellus*, cap. 7, Tractatus de cantu organico; *Guilielmi monachi De preceptis artis musicae*, ed. Albert Seay (Corpus scriptorum de musica, 11; [Rome], 1965), 44. Guilielmus classifies mensuration signs as (1) simple (*simplicia*), that is  $\textcircled{C}$ ; (2) composite (*composita*), that is simple plus dot of prolation, stroke of diminution; (3) more composite (*plusquam composita*), that is simple or composite plus one number or composite sign; or (4) even more composite (*composita et plusquam composita*), that is simple or composite plus two numbers. He classifies *modus cum tempore* signs as *plusquam composita* and *composita et plusquam composita*.

<sup>15</sup> Wegman, 'Another Mass by Busnoys?', 14 n. 28.

Based upon this understanding, double signatures in the *Confiteor* indicate the following proportions:

- (1)  $\textcircled{3}$  = 3 semibreves to 2 semibreves
- (2)  $\textcircled{6}$  = 2 semibreves to 3 semibreves, with an addition proportioning of 6 to every 1 semibreve within the first proportion, that is 12 to 3 semibreves overall. The figure 6 denotes longs as perfect within the prevailing mensuration  $\textcircled{4}$
- (3)  $\textcircled{C}$  = 4 to 6 minims

In every case the proportional meaning of each double signature is cumulative. The semibreves of the first sign are proportioned to the semibreves of  $\textcircled{3}$ ; the semibreves of the second sign are proportioned to the semibreves of the first sign; and the minims of the third sign are proportioned with those in the preceding  $\textcircled{C}$ 2.

There is no direct theoretical codification of double signatures as used in the manner described here. The writings of John Dygon *alias* John Wilbourn do, however, offer a glimpse into the practice of using two or more mensuration signs in combination to indicate musical proportions, although Dygon's discussion considerably post-dates the practice witnessed in the *Confiteor* by more than four decades.<sup>16</sup> Furthermore, there is no direct correlation between the signs found in the *Confiteor* and those presented in Dygon's second treatise. Nonetheless, Dygon offers a very late witness (but one not unfamiliar with Continental musical practices) to the use of combinations of mensuration signs to indicate proportions, albeit in concept rather than substance. Dygon's contact with the Continent, as reported by Theodor Dumitrescu, and the earlier evidence for the use of this notational process in Continental sources, urges caution should we wish to jump to the conclusion that double signatures or the proportional use of mensuration signs represents a distinctly English notational practice.

A striking feature revealed in Ex. 1 is the way in which unusual signatures mask what are simple musical relationships of melodic imitation. The D–F–E–D motif, occurring for first time in bb. 3–4 of the Bass where it is governed by  $\textcircled{3}$ , is a proportional transformation (4:3) of the first four minims of the cantus firmus (as shown in b. 9 of the Tenor).<sup>17</sup> The staggered imitative entries in the Alto and Cantus are at first notated the same as the beginning of the Bass. However, what is heard as the motif at b. 8 of the Alto and b. 10 of the Bass is no longer written in the same way as the first three occurrences. Instead two out of three double signatures in this composition govern the fourth and sixth occurrences of the D–F–E–D motif (the fifth occurrence of the motif occurs in the Tenor in simple minims). Although the notes of the motif in b. 10 of the Bass are semibreves as in its first three instances, the duration of these notes is only arrived at through the layering of successive diminutions and proportions. The restatement of the motif in the Alto at b. 8 is unrecognizable in its written form. Instead of minims or sesquiterthial semibreves, we now find longs governed by a double signature and an arabic numeral requiring several degrees of proportional dim-

<sup>16</sup> Theodor Dumitrescu states that Dygon's two music treatises (the second of which concerns us here), which survive in the early Tudor source Cambridge, Trinity College, O.3.38, date from the first third of the 16th c. or possibly slightly later. See Dumitrescu, *John Dygon's Proportiones Practicabiles secundum Gaffurium* (Studies in the History of Music Theory and Literature, 2; Urbana and Chicago, 2006), 15–16. Dumitrescu's discussion of Dygon's use of mensuration signs for indicating proportions, and his edition and translation of the second treatise are found on pp. 48–56 and 137–59 respectively. Dygon's system is borne out in practice in BL R.M. 24.d.2.

<sup>17</sup> Despite the assurances of Guilielmus Monachus, the meaning of  $\textcircled{3}$  is never equivalent to  $\textcircled{4}$ , at least insofar as the sign is used simultaneously with other mensurations; see *De preceptis artis musicae compendiosus libellus*, cap. 7 (Seay, 45). As discussed below, the successive use of this sign in all voices may indicate simply imperfect time with minor prolation.

intuition. But why would this apparent level of notational artifice exist for a straightforward proportional relationship as heard?

Wegman argues that the notational complexity of the *Confiteor* stems from the composer seeking to demonstrate his learnedness.<sup>18</sup> Another equally possible explanation for the *Confiteor*'s notational artifice (and one that complements Wegman's views) lies in the relationship between the significance of the text and this setting's symbolic use of musical notation. Article 16 of the Nicene Creed is the shared belief (*confiteor*) in the forgiveness of sins (*remissio peccatorum*) through receiving the unique sacrament of baptism, and thereby the promise of eternal life. The phrase *Confiteor unum baptisma in remissionem peccatorum* (I confess one baptism for the forgiveness of sins) corresponds to the sequence of unusual signs in the Cantus. Significantly, the genitive plural *peccatorum* is set in the Cantus to black notes just before the return to uncomplicated imperfect time with minor prolation at the beginning of the phrase *Et expecto resurrectionem mortuorum et vitam venturi seculi* (And I await the resurrection of the dead and life everlasting). It is not unreasonable to conclude that the notation at this point symbolizes the spiritual transformation and the forgiveness of sins received through the sacrament of baptism. Willem Elders notes similar uses of musical notation to symbolize the sung text in his study of symbolic elements of notation in music of the Netherlands. In particular he observes the use of ternary black coloration in musical passages setting the phrase *in remissionem peccatorum* followed by a return to white notation in several transmissions of polyphonic masses by Franco-Flemish composers of the late fifteenth and sixteenth centuries.<sup>19</sup> According to Elders, the transformation of black notes symbolizing sinfulness into white notes is emblematic of the phrase *remissionem peccatorum*, the forgiveness of sins.

However, the notational symbolism of the *Confiteor* from the *Missa L'Ardant desir* also extends to the use of increasingly complex proportional changes in imitative entries brought about by unusual signs like double signatures in the Bass, Alto, and Cantus voices that contrast with the more pedestrian notation and rhythm of the cantus firmus Tenor. It is not difficult to conclude that the multiplicity of proportional relationships in and between voices is also symbolic at this point. According to medieval number symbolism, unity is divine. Multiplicity, by its increased removal from unity, symbolizes states of imperfection or sinfulness.<sup>20</sup> The multiple proportional mensuration signs in the Cantus, Alto, and Bass might therefore symbolize a state of imperfection that is removed from the divine unity. In more than one sense, the Tenor performs a transformative role in the *Confiteor* in relation to the proportional complexities in other voices. It enters after the other three voices have begun exploring their proportional puzzles, but it does so using simple note values in imperfect time with minor prolation. All voices return to imperfect time with minor prolation in b. 15. In other words the Tenor provides the mensural framework to which the other voices return, each eventually forming a mensural unity with the Tenor. The Tenor therefore symbolically brings about the transformation or metaphorical salvation of other voices, the removal (*remissio*) of their wayward proportions through the influence of the cantus firmus sung in regular note values. Significantly, the moment of

<sup>18</sup> Wegman, 'Another Mass by Busnoys?', 14.

<sup>19</sup> Willem Elders, *Studien zur Symbolik in der Musik der Alten Niederländer* (Bilthoven, 1968), 29–35; id., 'Das Symbol in der Musik von Josquin des Prez', *Acta Musicologica*, 41 (1969), 164–85 at 166–7.

<sup>20</sup> Vincent F. Hopper, *Medieval Number Symbolism: Its Sources, Meaning, and Influence on Thought and Expression* (New York, 1938), 77 and 108.

complete transformation of all voices back into imperfect time with minor prolation occurs after eight breves of the *cantus firmus* melody sounding in the Tenor. To emphasize the number eight further, the Tenor leaps an octave, the interval at which pitches begin anew, to the first note in b. 16 and continues unconventionally in the same direction using conjunct motion.

As Vincent Hopper notes in his account of number symbolism in the Middle Ages, eight is a numerical symbol of salvation or rebirth.<sup>21</sup> In terms of ecclesiastical architecture directly relevant to the text of the *Confiteor*, the baptismal font was (and still is) often an octagonal shape. Several octagonal mazes, which Craig Wright situates as a physical performance space for metaphorically enacting the Harrowing of Hell, were constructed in the naves of French and Italian cathedrals in the Middle Ages.<sup>22</sup> Their association with the mythology of Easter Saturday, the day on which catechumens were traditionally baptized into the church, again emphasizes the importance of number symbolism in the late Middle Ages. Eight resounds in biblical texts and medieval theology as a numerical symbol of salvation or a new beginning: eight souls were saved from the great flood (Genesis 6: 10 and 7: 7);<sup>23</sup> Christ rose on the eighth day after Palm Sunday.<sup>24</sup> 1 Peter 3: 18–20 explicitly connects the salvation of eight of Noah's family by the purifying flood with baptism into the church of the resurrected Christ. The eighth age in Dante's *Paradiso* (canto 27) is the age of final redemption.<sup>25</sup>

The symbolic *cantus firmus*, which brings about a salvific transformation of the other voices, invites speculation about the nature of extra-musical associations of its chanson model. As Fallows notes in his article on the chanson model, Martial d'Auvergne refers to *L'Ardant desir* as a *basse danse*, suggesting that the transformative nature of the model resides in its innate requirement that others dance to its tune.<sup>26</sup> However, Fallows also notes that the composer of the *Missa L'Ardant desir* must have used the derivative chanson and not the *basse danse* itself as a model since the head motif at the beginning of the first four items of the mass follows the chanson's discant line. Unfortunately, this is where a speculative impasse occurs: the lack of a complete text for the chanson model provides few opportunities for further determining the cultural significance of the chanson model and *cantus firmus*. Other learned devices in the *Missa L'Ardant desir* such as mensural transformations of the *cantus firmus* and cryptic voice names and canons that require a knowledge of Greek music theory or theology have already been discussed in the literature and are not directly relevant to the present discussion of fifteenth-century notational practice.<sup>27</sup> Rather I wish to

<sup>21</sup> Ibid. 114. Cf. Willem Elders, *Symbolic Scores: Studies in the Music of the Renaissance* (Leiden, 1994), 117. Elders considers the frequent occurrence of eight-part choral works in the English Renaissance an expression of 'the longing for eternal salvation'. For other examples of number symbolism in music and in musical notation at opposite ends of the temporal spectrum covered in this study, see Michael Long, 'Symbol and Ritual in Josquin's *Missa Di Dadi*', *Journal of the American Musicological Society*, 42 (1989), 13–14; Michael Eisenberg, 'The Mirror of the Text: Reflections in *Ma fin est mon commencement*', in Katelijne Schiltz and Bonnie J. Blackburn (eds.), *Canons and Canonic Techniques, 14th–16th Centuries* (Leuven, 2007), 83–110.

<sup>22</sup> Craig Wright, *The Maze and the Warrior: Symbols in Architecture, Theology, and Music* (Cambridge, MA; London, 2001), 50; Eisenberg, 'The Mirror of the Text', 93.

<sup>23</sup> Hopper, *Medieval Number Symbolism*, 98; cf. Heinz Meyer, *Die Zahlenallegorese im Mittelalter* (Munich, 1975), 138.

<sup>24</sup> Augustine, *Epistle* 166. 8. 23; see Hopper, *Medieval Number Symbolism*, 81.

<sup>25</sup> Hopper, *Medieval Number Symbolism*, 199–200.

<sup>26</sup> David Fallows, 'Busnoys and the Early Fifteenth Century: A Note on "L'ardant desir" and "Faictes de moy"', *Music & Letters*, 71 (1990), 20–4 at 20.

<sup>27</sup> See Rob C. Wegman, 'Another Mass by Busnoys?', 16–18; Bonnie J. Blackburn and Leofranc Holford-Strevens, 'Juno's Four Grievances: The Taste for the Antique in Canonic Inscriptions', in Jürgen Heidrich, Hans Joachim Marx and Ulrich Konrad (eds.), *Musikalische Quellen—Quellen zur Musikgeschichte: Festschrift für Martin Staehelin zum 65. Geburtstag* (Göttingen, 2002), 159–174 at 174. I am most grateful to Dr Blackburn and Dr Holford-Strevens for

Ex. 3. Beginning of *Qui propter nos homines* from the Marian mass by Reginald Liebert (Trent 92, fos. 59<sup>v</sup>–60<sup>r</sup>)

discuss precedents for the signs used in this polyphonic mass, not to justify my reading of the *Confiteor* but with a view to exploring different meanings behind the superficial semblance of signs.

#### EARLIER EXAMPLES OF DOUBLE SIGNATURES

Double signatures are also found earlier in the fifteenth century. The sign  $\text{C}$  is found at the beginning of the Cantus of the *Qui propter nos homines* of Reginald Liebert's Marian Plenary Mass transmitted in Trent 92 (MS 1379), fos. 61<sup>v</sup>–62<sup>r</sup> (old foliation 59<sup>v</sup>–60<sup>r</sup>) (see the semi-diplomatic transcription in Ex. 3).<sup>28</sup> The current view is that Liebert's mass occurs in a layer of Trent 92 copied after 1436 (the dating for Du Fay's *Nuper rosarum flores*) and completed c.1440 in the Basle-Constance region.<sup>29</sup> The double signature used here indicates that three imperfect semibreves of the Cantus are sung against two imperfect semibreves of the Contratenor and Tenor.<sup>30</sup>

drawing my attention to their publication. A recent discussion of the continued use of cryptic canons in Sistine Chapel manuscripts (but not CS 14 and 51) is found in Thomas Schmidt-Beste, 'A Dying Art: Canonic Inscriptions and Canonic Techniques in the Sixteenth-Century Papal Chapel Repertory', in Schiltz and Blackburn (eds.), *Canons and Canonic Techniques*, 339–55.

<sup>28</sup> Busse Berger, *Mensuration and Proportion Signs*, 170–1.

<sup>29</sup> On the date and origin of Trent 92-I, see Tom R. Ward, 'The Structure of the Manuscript Trent 92-I', *Musica Disciplina*, 29 (1975), 127–47; also Reinhard Strohm, *The Rise of European Music, 1380–1500* (Cambridge, 1993), 252–3. For the relationship of Trent 92-II and Trent 89-I to Trent 92-I, see Peter Wright, 'The Compilation of Trent 87<sub>1</sub> and 92<sub>2</sub>', *Early Music History*, 2 (1982), 237–71. For the identification of Johannes Lupi as the main scribe in Trent 87-I and 92-II, see Peter Wright, 'On the Origins of Trent 87<sub>1</sub> and 92<sub>2</sub>', *Early Music History*, 6 (1986), 245–70. Liebert's *Missa de Beata Virgine* does not occur in the layer Wright concludes is in the hand of Johannes Lupi.

<sup>30</sup> For an edition of Reginald Liebert's *Credo*, see *Early Fifteenth-Century Music*, ed. Gilbert Reaney (Corpus Mensurabilis Musicae, 11; [Rome], 1966), iii: *Collected Works of Richard Loqueville, Estienne Grossin, R. Liebert and Benoit*, 81–6. Reaney (p. xx) notes a register error in the Contratenor of the *Qui propter nos* caused by a misplaced C-clef on





PL. 2. *Pour le desfault du noble dieu Bachus*, Oxford 213, fo. 108<sup>v</sup>. Used with the kind permission of the Bodleian Library, University of Oxford

Another double signature occurs in the only surviving copy of Baude Cordier's rondeau *Pour le desfault du noble dieu Bachus* on fo. 108<sup>v</sup> of Oxford 213. Current scholarship holds that this source was copied in the Veneto between the years 1426 and 1436.<sup>31</sup> This example, however, does not consist of one mensuration sign placed above another but two signs,  $\circ$  and  $\odot$ , placed side by side at the beginning of the Contratenor (see Pl. 2).<sup>32</sup> The Tenor commences in unsigned imperfect time with major prolation and the Cantus begins with the sign  $\odot 2$ , but then moves to imperfect time with major prolation after passing through passages governed by the proportional signs  $\circ$  and  $\frac{3}{2}$  ( $3:2$ ).  $\odot 2$  indicates perfect time with minor prolation in which minims are halved (duple proportion) compared to the Tenor. The double signature in Oxford 213 appears to ensure that the performer of the Contratenor understands how  $\circ$  relates to imperfect time with major prolation in the Tenor. The normative use of  $\circ$  to indicate  $4:3$  proportion needs little comment here, although an interesting use of this sign in the Cantus of *Pour le desfault* points to a special status for this sign. When  $\circ$  occurs

the third rather than fourth staff line. Reaney's suggestion has been followed here, although for the second semibreve in b. 6, his edition has an *e*, the manuscript an erroneous *f*, which is corrected to *g* here. Colour digitizations of the Trent codices can be found online at the page 'I sette codici musicali trentini del Quattrocento', *TrentinoCultura.net*, <<http://www.trentinocultura.net/catalogo/manoscrittimusicali/>>. The dating of Liebert's mass is uncertain, although stylistically it shares features with compositions dated to the second and third decades of the 15th c. Liebert or Libert is documented as a singer employed at Cambrai in 1424 and he appears to belong to the first generation of 15th-c. Franco-Flemish composers; see Tom R. Ward, 'Libert, Reginaldus', *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie and John Tyrrell (London, 2001), xii. 637; Kevin N. Moll, 'The "Plainsong Mass" of Reginaldus Liebert (ca. 1425): Some Practical Speculations on Speculative Practices', *Viator*, 32 (2001), 205–28.

<sup>31</sup> Graeme M. Boone, 'Dufay's Early Chansons: Chronology and Style in the Manuscript Oxford, Bodleian Library, Canonici misc. 213' (Ph.D. diss., Harvard University, 1987), 112. Fallows proposed the dating 1428–34, with last gathering added in 1436: *Oxford, Bodleian Library, MS. Canon. Misc. 213 with an Introduction and Inventory by David Fallows*, ed. David Fallows (Late Medieval and Early Renaissance Music in Facsimile, 1; Chicago and London, 1995), 19–20.

<sup>32</sup> This practice is unrelated to the well-known use of pairs of adjacent signs at the beginning of a notated part in Johannes Ockeghem's *Missa Prolationum* to signify a two-part mensural canon in which one voice is governed by the first sign and the other by a second sign.

after  $\odot 2$ , its proportional meaning of 4:3 is construed relative to the durations governed by the preceding proportional  $\odot 2$  and *not* in relation to any other voice or mensuration. That  $\odot$  in Cordier's rondeau functions as a localized proportion sign, contingent upon the preceding mensuration or proportion, is significant when we observe the same process in the *Confiteor* of the *Missa L'Ardant desir* and another work discussed below.

The earliest example of a double signature known to me occurs in the transmission of Johannes Suzoy's *Pythagoras, Jobal et Orpheus* in the Boverio fragments (fos. 4<sup>v</sup>–5<sup>r</sup>).<sup>33</sup> Codex Chantilly (fo. 30<sup>v</sup>), a source copied no earlier than 1395 but possibly as late as the mid-1410s, and Paris 22069 (fos. 153<sup>r</sup>, 155<sup>v</sup>, 156<sup>v</sup>) also transmit *Pythagoras*.<sup>34</sup> Both contain instructions written below certain passages of notes that must be sung in a duple (2:1) proportion (see the note to the Appendix for further details).<sup>35</sup> In the same passages, red/void coloration indicates a 3:2 proportion, which, when combined with the duple proportion, results in an overall 8:3 proportion between minims after the sign and perfect time with minor prolation in other voices.<sup>36</sup> In Boverio, on the other hand, mensuration signs, whose meaning is explained by a canon at the end of the composition, are written in the place of the verbal subscriptions and coloration in Codex Chantilly. In Boverio, a canon specifies that  $\odot$  indicates a duple proportion;  $\circ$  has its usual meaning of a 4:3 proportion. In the concluding passage of the Cantus, those two signs are combined to form a double signature indicating an 8:3 proportion. Example 4 compares the readings at the end of *Pythagoras* found in the Boverio and Chantilly manuscripts. The lowest staff in each system of Ex. 4 transcribes the passage in question. The use of a double signature in Boverio, however, appears experimental, since only  $\circ$  appears in the same relative position in the musical rhyme at the *clos*. In this earlier instance, the effect of the earlier  $\odot$  is multiplied by  $\circ$ .<sup>37</sup>

The current view is that the Boverio fragments were copied in the second decade of the fifteenth century and that they can be connected with the Pisan papacy in Italy.<sup>38</sup>

<sup>33</sup> Facsimile edition: *Il codice T. III. 2: Torino, Biblioteca nazionale universitaria = The Codex T. III. 2*, ed. Agostino Ziino (Lucca, 1994).

<sup>34</sup> On the *terminus post quem* for Codex Chantilly see Ursula Günther, 'Eine Ballade auf Mathieu de Foix', *Musica Disciplina*, 19 (1965), 69–81. I suggested a copying date c.1415 in Jason Stoessel, 'A Fifteenth-Century Response to a Musical Text: The Editor-Scribe in Chantilly, Bibliothèque du Musée Condé, ms. 564 (Codex Chantilly)', in Michael Ewans, Rosalind Halton, and John A. Phillips (eds.), *Music Research: New Directions for a New Century: Proceedings of the 25th National Conference of the Musicological Society of Australia* (Cambridge, 2004), 384–95. This falls almost squarely in the middle of the dating of 'between ca. 1408–09 and 1418–20' proposed for the Codex Chantilly in Yolanda Plumley and Anne Stone, *Chantilly Codex, Bibliothèque du château de Chantilly, Ms. 564: Introduction* (Építome musical; Turnhout, 2008), 97 and 181.

<sup>35</sup> Facsimile edition: *Chantilly Codex, Bibliothèque du château de Chantilly, Ms. 564: Facsimile*, eds. Yolanda Plumley and Anne Stone (Építome musical; Turnhout, 2008).

<sup>36</sup> On the device in question also see Ursula Günther, 'Die Anwendung der Diminution in der Handschrift Chantilly 1047', *Archiv für Musikwissenschaft*, 17 (1960), 1–21 at 17–18. Günther's use of the term 'subprolation' is, however, problematic, as is her conclusion that a major diminished prolation (dubbed erroneously as major subprolation by Günther) operates in the passages sung *per medium*. The notation in the proportionally diminished passage clearly indicates that minor prolation prevails, continuing the same prolation (and time) found in the previous *ut iacet* section. Günther's remarks concerning the use of the mensuration sign  $\odot$  in the Chantilly transmission of *Pythagoras* (Pictagoras) should also be disregarded.

<sup>37</sup> For the text of the canon in Boverio, see the Appendix. Cf. *Il codice T. III. 2*, ed. Ziino, 57. In Ex. 4 red full notation is indicated by half brackets.

<sup>38</sup> Ibid. 102–11. Ziino proposes two hypotheses concerning the origin of the fragments: a Pisan–Bolognese Franciscan house during the period 1409–17; or a private chapel of a cardinal from central-northern Italy during its sojourn at the Council of Constance in 1417. In relation to this last hypothesis Ziino suggests that the courts of Francesco Zabarella, Marino di Tocco, or even schismatic Pope John XXIII are likely candidates. This last suggestion has been examined further in Lucia Marchi, 'Intorno all'origine del codice T.III.2 della Biblioteca Nazionale Universitaria di Torino', *Ricerchare*, 15 (2003), 7–37. Marchi proposes (p. 31) that the first part of Boverio (Tn T.III.2) was copied during Pope John XXIII's journey from Bologna to Rome (1410–11) or from Rome to Constance (1413–16), and the

Ex. 4. Mensural devices compared for transmissions of Johannes Suzoy's *Pythagoras*, *Jobal et Orpheus*

The image displays three staves of musical notation. The top staff is labeled 'Boverio' and features a mensural system with a square neume on a four-line staff, including a double bar line and a final sign. The middle staff is labeled 'Chantilly' and shows a similar mensural system with a square neume and a final sign. The bottom staff is labeled 'Transcription' and uses a modern treble clef with a key signature of one flat (B-flat). It includes a double bar line and a final sign. Below the transcription staff, there is a section of music with a key signature of one flat and a time signature of 8/3. This section includes a double bar line and a final sign. The text 'hec cantetur per medium usque ad signum' is written below the transcription staff. The text 'Chantilly:' is written above the transcription staff. The text '8:3' is written below the transcription staff.

Whether Chantilly or Boverio reflects Suzoy's notational intention is obscured by the likelihood that both manuscripts are some distance both temporally and geographically from the composition's putative archetype. More important here, however, is the observation that double signatures existed already in the second decade of the fifteenth century if not earlier.

Polymetricism, like that found in *Pythagoras* and *Pour le desfault*, is well represented in compositions from around the turn of the fifteenth century, but notational devices other than double signatures are used to indicate relationships like those occurring in examples discussed above. Coloration, arabic numerals, and canons (written instructions)—sometimes like that found in the Chantilly *Pythagoras*, sometimes attached to mensuration signs as in the Boverio *Pythagoras*—occur frequently, usually in a mensural framework of minim equivalence across the four basic mensurations indicated by ☉, ○, ☽, and ☾.<sup>39</sup> There are a small number of surviving examples in which basic mensuration signs alone indicate polymetric relationships across voices. The first example

second part in Rome itself during the years 1412–13. Concerning this dating of *Pythagoras*, there are few clues. Johannes Suzoy may be the living poet mentioned by the author of the *Règles de la seconde rhétorique* datable to between 1406 and 1408; see *Recueil d'arts de seconde rhétorique*, ed. M. E. Langlois (Collection de documents inédits; Paris, 1902), 14. The dating provided here is based upon the necessity that the *Règles* was completed after the deaths of the two *rhétoriciens* Eustache Deschamps (c.1346–1406) and Jean Froissart (1333?–1400/1 or 1410?). The author of the *Règles* also mentions Tapissier as a contemporary (*de present*). This suggests that the treatise was completed before 1408 if we take that date as Wright's presumed obit for the Burgundian musician Jean Tapissier; see Craig Wright, 'Tapissier and Cordier: New Documents and Conjectures', *Musical Quarterly*, 59 (1973), 177–98 at 184. Despite the fact that Ursula Günther dated his works stylistically to the 1380s (Ursula Günther, 'Susay [Suzoy], Jo(hannes)', *New Grove Dictionary*, ed. Sadie and Tyrrell, xxiv. 732), there is little to tie this composer and his works to a particular time and place.

<sup>39</sup> On polymetricism in 14th- and 15th-c. music, see Ursula Günther, 'Polymetric Rondeaux from Machaut to Dufay: Some Style-Analytical Observations', in Eugene K. Wolf and Edward H. Roesner (eds.), *Studies in Sources and Style: Essays in Honor of Jan LaRue* (Madison, 1990), 75–108; Ursula Günther, 'Some Polymetric Songs in the Manuscript Torino J.II.9', in Ursula Günther and Ludwig Finscher (eds.), *The Cypriot-French Repertory of the Manuscript Torino J.II.9* (Neuhausen-Stuttgart, 1995), 463–89.



occurs in the Contratenor of Matheus de Perusio's *Le greygnour bien*, transmitted uniquely on fos. 31<sup>v</sup>–32<sup>r</sup> in Modena A.<sup>40</sup> This ballade's notation is exceptional in that it implicitly requires that three minims of both  $\circ$  and  $\odot$  be proportioned to two minims in other voices in unsigned imperfect time with minor prolation, so that the following relationship obtains between the Contratenor (Ct) and the two other voices (Cantus and Tenor).<sup>41</sup>

$$\odot \downarrow\downarrow\downarrow\downarrow\downarrow\downarrow \text{ (Ct)} = \circ \downarrow\downarrow\downarrow\downarrow\downarrow\downarrow \text{ (Ct)} = [\text{C}] \downarrow\downarrow\downarrow\downarrow \text{ (C and T)}$$

Tellingly, the Contratenor in *Le greygnour bien* never uses  $\odot$  to effect minim equivalence with the Cantus and Tenor voices; instead it relies on an array of unusual note shapes and minim-augmenting void coloration. Similarly, the Cantus and Tenor use three red minims in the place of two black minims. It is as though the mensural frameworks of the Contratenor (which begins with imperfect time with major prolation explicitly signed  $\odot$ ) and the other two voices (for which the initial imperfect time with minor prolation is not indicated by a mensuration sign but is implicit) are mutually incommensurable: they are conceived and sung alongside each other in complex counterpoint but never really in the same mensural 'universe'.<sup>42</sup> Although less ambitious than *Le greygnour bien* in its rhythmic complexities, a second example of basic mensuration signs used to effect proportions at the minim occurs in the anonymous *Ung lion say* (Codex Chantilly, fo. 28<sup>v</sup>). This piece employs the older sign  $\odot$  to indicate the proportioning of three minims to two minims of imperfect time with minor prolation; unusually, the sign  $\odot$  indicates that mensuration.

There are no explicit clues concerning the unusual proportional meaning of seemingly basic mensuration signs in *Le greygnour bien* and *Ung lion say* (even if the second example uses an older style of signs). More commonly, a scribe supplies a written instruction, otherwise known as a canon in the literal sense of 'a rule', to prescribe a meaning—usually proportional—for one or more mensuration signs. Johannes de Janua's *Une dame requis* (Modena A, fo. 12<sup>r</sup>) illustrates this common practice, although the method by which relationships between mensurations are specified is unusual. The Cantus of this ballade sporadically uses  $\odot$  to indicate six minims in the place of

<sup>40</sup> Published editions of *Le greygnour bien* are found in *French Secular Music of the Late Fourteenth Century*, ed. Willi Apel (Mediaeval Academy of America Publication, 55; Cambridge, Massachusetts, 1950), no. 1; *French Secular Compositions of the Fourteenth Century*, ed. Willi Apel (Corpus Mensurabilis Musicae, 53; [Rome], 1970), no. 51; *French Secular Music: Ballades and Canons*, ed. Gordon Kay Greene (Polyphonic Music of the Fourteenth Century, 20; Monaco, 1982), no. 18. All contain transcription errors; for a corrected edition, see Jason Stoessel, 'The Captive Scribe: The Context and Culture of Scribal and Notational Process in the Music of the *ars subtilior*' (Ph.D. diss., University of New England, 2002), ii. 187–192, critical notes 380–1. On the notation of this ballade, also see Maria Teresa Rosa Barezzani, 'Una rilettura di *Le Greygnour Bien* di Matteo da Perugia', *Philomusica online*, 1/1 (2001–2), available at <<http://philomusica.unipv.it>>.

<sup>41</sup> Because Matheus's compositions are preserved in black notation, I will use black notes here; black minims should not be confused with semiminims that were used in white notation sources after c.1430.

<sup>42</sup> On this basis, it is a stretch to conclude that  $\odot$  in this piece indicates a duple proportion, as in Busse Berger, *Mensuration and Proportion Signs*, 54 n. 9 and 172. The sign indicates a 4:3 proportion in relation to the preceding imperfect time, major prolation in the Contratenor, and therefore only incidentally produces a duple proportion with the Cantus and Tenor. Busse Berger is also incorrect concerning the use of this sign in Philipoctus de Caserta's *Par le grant senz d'Adriane*, based upon a misunderstanding of the meaning of the sign  $\odot$ . Here, as in a few other instances from around the turn of the 15th c., this sign indicates imperfect time, with major prolation indicated intrinsically. I discuss additional examples illustrating the hitherto misunderstood use of early mensuration signs to indicate the division of the breve (time) but not the division of the semibreve (prolation) in Jason Stoessel, 'The Interpretation of Unusual Mensuration Signs in the *Ars subtilior*', in Yolanda Plumley and Anne Stone (eds.), *A Late Medieval Songbook and Its Context: New Perspectives on the Chantilly Codex (Bibliothèque du Château de Chantilly, Ms. 564)* (Turnhout, 2010), 179–202.

four in  $\text{C}$ . The same voice also uses  $\odot$  to indicate nine minims sung in the place of four minims in  $\text{C}$ .<sup>43</sup> A canon stipulates this unusual set of relationships with the instruction that ‘everything in this song (*cantus*) is performed (lit. drawn out) under the one measure (*mensura*)’ (see Appendix for the original Latin), an instruction requiring the equivalence of breves in all mensurations.<sup>44</sup> There is little doubt that breve equivalence is required in *Une dame requis*, but can the same be said for *Le greygnour bien* and *Ung lion say*? In *Le greygnour bien* breve equivalence is implicit but, as I have stated, only occurs in terms of the relationship of the Contratenor to the other voices; the extraordinary length to which the notator goes to indicate 2:3 proportions in this voice using coloration without a thought to using  $\text{C}$  argues against breve equivalence as a notational determinant in *Le greygnour bien*. For *Ung lion say*, there is little in the notation to indicate that breve equivalence is an underlying concept; instead its mensuration signs have a proportional significance and breve equivalence is accidental. As example after example illustrates in early fifteenth-century sources, the majority of mensuration signs used in an implicit non-normative manner or attached to an explicit canon (see Appendix) are proportional in their meaning or are imbued with a proportional significance.

What can be observed as we move backwards in the source chronology from the *Missa L'Ardant desir* to Suzoy's *Pythagoras* is a conceptual shift in the meaning of double signatures. In the *Confiteor*, double signatures function so that each mensuration sign represents a distinct quantity of minims or semibreves. Together they indicate a proportion, the upper mensuration sign also determining the subsequent mensuration. The same cannot be always said for the earlier signs that represent contingencies and experiments soon replaced by other notational processes. Busse Berger considers Liebert's signature the result of breve equivalence but I am not convinced that this is an adequate, let alone accurate, way of conceptualizing this practice during the first half of the fifteenth century. In French *ars nova* notation and its descendant in the first half of the fifteenth century, minims are equivalent across the four basic mensurations, and for this reason proportions are construed in the first instance to override this inherent relationship. In the case of Liebert's *Qui propter* there is little to indicate that the double signature needs to be understood according to breve equivalence; rather, just like the examples discussed above in which simple mensuration signs are used to indicate proportional relationships between minims, Liebert's sign indicates six minims (organized according to perfect time with minor prolation) sung proportionally in the place of four in the other voices.

I would argue that the use of a double signature at the beginning of Cordier's *Pour le desfault* represents a process of adaptation, especially if we recall that Oxford 213 is one of the earliest sources written largely in white notation. In black notation sources like the Codex Chantilly and Modena A, there are several examples where void red coloration indicates a 4:3 proportion in relation to the prevailing mensurations and to other voices.<sup>45</sup> For indicating proportions more complex than 3:2 in white notation,

<sup>43</sup> On theoretical codification of  $\odot$  for indicating a 9:4 proportion between minims see Busse Berger, *Mensuration and Proportion Signs*, 55, 61, 68, 71, and 177.

<sup>44</sup> On the concept of *mensura* in 15th-c. music, see Ruth I. DeFord, ‘The *Mensura* of  $\phi$  in the Works of Du Fay’, *Early Music*, 34 (2006), 111–36. Also see Stone, ‘Che cosa c'è di più sottile riguardo l'ars subtilior’, 12–20.

<sup>45</sup> See Stoessel, ‘The Captive Scribe’, 195, 200. On the theoretical discussion of this type of coloration, see Jason Stoessel, ‘Symbolic Innovation: The Notation of Jacob de Senleches’, *Acta Musicologica*, 71 (1999), 136–64 at 143–4.

proportional mensuration signs and proportion signs replace coloration using different inks. The double signature at the beginning of *Pour le desfault* is one of the limited number of possibilities for indicating the required proportional relationship between parts in white notation. Yet solutions to the challenges brought about by the switch to white notation already appear in black notation pieces ascribed to Cordier and the notational innovations contained therein possibly facilitated the transition to white notation. Cordier's famous *Tout par compas* (written on circular staves in Codex Chantilly, fo. 12<sup>r</sup>) uses the sign  $\frac{4}{3}$  to indicate the 4:3 proportion in relation to previous minims in  $\textcircled{C}$ . When we arrive at the Boverio transmission of *Pythagoras*, there is no doubt that its notation functions proportionally relative to the minim and that minims are equivalent across the four basic mensurations. Notational inconsistency in this transmission suggests, however, that we are witnessing at first hand scribal intervention and experimentation. This is not to dismiss the instance of a double signature in the Boverio *Pythagoras* as accidental and therefore inconsequential to a history of notational process; rather what we see here is a scribe working at the very cutting edge of music writing, drawing on the multitude of notational experiments that flourished around the turn of the fifteenth century.

A further point to make is that I am not proposing that the use of double signatures observed in early fifteenth-century sources directly influenced those encountered in CS 51. Indeed, the examples in CS 51 operate in different ways mensurally compared to the earliest examples. CS 51's double signatures rely in part on semibreve equivalences, some proportional signs, and the traditional relationship of basic mensuration signs to one another in terms of perfect or imperfect breves and minim equivalence. The earlier uses of double signatures are in the first instance based on proportional principles, although the sign in Liebert's *Qui propter* bears a closer relationship with the signs used in CS 51 on account of the emerging breve equivalence between  $\textcircled{C}$  and  $\textcircled{O}$ . Clearly the message here is a simple (and possibly banal) one: visual semblance across sources cannot be used as a sole criterion for mensural meaning insofar as it concerns mensuration signs or signatures.

#### FURTHER UNUSUAL SIGNS

I would like to take this argument one step further by examining other uncommon mensuration signs found in the *Confiteor* of the *Missa L'Ardant desir*, again with a view to identifying apparent semblances with earlier surviving sources. The  $\Phi$  sign is related to the widely used  $\textcircled{O}$ . The meaning of  $\Phi$  relies on the normative meaning of  $\textcircled{O}$  to indicate a 4:3 proportion. The application of the stroke in  $\Phi$  in the *Confiteor* extends the significance of  $\textcircled{O}$ . Earlier examples of  $\Phi$  occur in two chansons in Oxford 213. It appears in Hugo de Lantins's *Je suy exent* (Oxford 213, fo. 57<sup>r</sup>) and is known to most students of early notation due to its inclusion in Apel's handbook on early music notation (see Ex. 5 for a diplomatic transcription).<sup>46</sup>

Numerous complexities are encountered in reading *Je suy exent* that are relevant to understanding its use of  $\Phi$ . The relative tempo relationship between the first section of this rondeau, in which all voices commence with  $\Phi$ , and its second section, at the beginning of which all voices simultaneously change to  $\textcircled{O}$ , has received various interpretations ranging from precise doubling of tempo (1:2) to a reversed application of the approximate increase in tempo indicated by the stroke that indicated what Johannes

<sup>46</sup> Transcribed in *Pièces polyphoniques profanes de provenance liégeoise (XVe siècle)*, ed. Charles van den Borren (Flores Musicales Belgicae, 1; Brussels, 1950), 53–4.

Ex. 5. Hugo de Lantins, *Je suy exent* (Oxford 213, fo. 57<sup>r</sup>)

Tinctoris called *acceleratio mensurae* in his *Proportionale musices* (1473–4).<sup>47</sup> While a preponderance of longs in first section of the Cantus may support either interpretation of  $\phi$  in relation to the  $\circ$  section, there are contraindications in the first section in its use of rapid minim triplets in the introductory melisma and, as we will see, in the relation-

<sup>47</sup> Willi Apel, *The Notation of Polyphonic Music, 900–1600* (Cambridge, Mass., 1953), 176–9; J. A. Bank, *Tactus, Tempo and Notation in Mensural Music from the 13th to the 17th Century* (Amsterdam, 1972), 135. On *acceleratio mensurae*, see Wegman, ‘What is Acceleratio mensurae?’.

## Ex. 5. Continued

25 go - uer - ne - ment

30 con - fort, li - se - se, sou - las,

36 es - ba - te - ment mont re - len - quy de -

41 - ser mais sans re - tour

ship of  $\phi$  with other mensuration signs. That the simultaneous ‘changes’ in mensuration correspond to the musico-poetic structure of a rondeau offers further support for the use of cut signs in the early fifteenth century as a general-purpose sign comparable to the use of the *signum congruentiae* as a performance cue.<sup>48</sup>  $\phi$  occurs in the second

<sup>48</sup> Margaret Bent has argued that  $\phi$  may at times serve as cautionary sign or sign of coordination at the beginning of sections of music. See Margaret Bent, ‘The Early Use of the Sign  $\phi$ ’, *Early Music*, 24 (1996), 199–225; ead., ‘The Use of Cut Signatures in Sacred Music by Ockeghem and his Contemporaries’, in Philippe Vendrix (ed.), *Johannes*

section of the Cantus after  $\circ$  and indicates an 8:3 proportion.  $\circ$  is also used, indicating in all but one case a 4:3 proportion in relation to either  $\phi$  (relative to semibreves or minims) or  $\circ$  (relative to minims). But the passage following the second  $\circ$  in the Cantus requires eight semibreves to sound in the place of the previous two perfect semibreves or six minims of  $\textcircled{C}$ . That this second instance of  $\circ$  results in an 8:3 proportion (semibreves) in relation to  $\phi$  in the Contratenor and  $\phi$  overall, and is therefore seemingly identical in meaning to  $\Phi$ , has prompted most scholars to conclude that the second instance of  $\circ$  in the Cantus of this rondeau is a scribal error.<sup>49</sup> However, if we proceed by observing that certain mensuration signs have a cumulative effect (as already suggested above) and that the meaning of the second  $\circ$  and  $\Phi$  is contextual, a different picture of this piece's notational practice emerges.

In the first section of the Cantus, the following sequence of equivalences leads up to the second  $\circ$ :

$$\phi \diamond \diamond \rightarrow \circ \diamond \diamond \rightarrow \textcircled{C} \downarrow \downarrow \downarrow \downarrow \rightarrow \circ \diamond \diamond \diamond \diamond$$

In the second section, the following sequence of equivalences obtains:

$$\circ \diamond \diamond \rightarrow \Phi \square \square \square \rightarrow \circ \diamond \diamond \rightarrow \textcircled{C} \downarrow \downarrow \downarrow \downarrow (\downarrow = \downarrow)$$

The following observations arise from the sequence of relationships shown above:

(1)  $\textcircled{C}$  operates in two ways: the first as normative cancellation of the previous proportional mensuration sign ( $\circ$ ); the second as an indication of a minim-equivalent change of mensuration. To presuppose otherwise is to impose a direct relationship between  $\phi$  and  $\textcircled{C}$  (though an incidental relationship naturally occurs) that does not exist as a sequence of mensuration signs in this piece.

(2) Intrinsic notational features, including the presence of semiminims and a passage of minims and black triplet minims in duple proportion (indicated by 2), suggest that  $\textcircled{C}$  in the second section differs in its mensural meaning compared to its first instance, which uses notes no smaller than the minim.

(3)  $\circ$  indicates a 4:3 proportion relevant to the temporal unit of the preceding mensuration, suggesting the semibreve is the temporal unit in both  $\circ$  and  $\phi$ , and the minim is the temporal unit in  $\textcircled{C}$ . Unusually, the second  $\circ$  proportions semibreves to minims in  $\textcircled{C}$ .

The notational complexity of this piece resides, therefore, not so much in its use of  $\circ$  and  $\Phi$  signs, but in understanding the meaning of  $\textcircled{C}$ . Earlier discussions of this piece by Apel, Reynolds, and Bank have assumed that mensuration signs are related to a 'global' mensural framework or so-called *integer valor* (hence the difficulty with two signs apparently indicating 8:3), whereas the contextual relationship of successive pro-

Ockeghem: *Actes du XL<sup>e</sup> Colloque international d'études humanistes* (Paris, 1998), 641–80; ead., 'The Use of Cut Signatures in Sacred Music by Binchois'; ead., 'The Myth of *Tempus perfectum diminutum* in the Chantilly Manuscript', in Plumley and Stone (eds.), *A Late Medieval Songbook*, 203–27. I am grateful to Dr Bent for supplying a copy of the last-mentioned article in advance of its publication. Also see Rob C. Wegman, 'Different Strokes for Different Folks? On Tempo and Diminution in Fifteenth-Century Music', *Journal of the American Musicological Society*, 53 (2000), 461–505; Margaret Bent, 'On the Interpretation of  $\phi$  in the Fifteenth Century: A Response to Rob Wegman', *Journal of the American Musicological Society*, 53 (2000), 597–612. Also see DeFord, 'The mensura of  $\phi$  in the Works of Du Fay'.

<sup>49</sup> *Pièces polyphoniques profanes*, ed. van den Borren, 53 n. 1; Apel, *The Notation of Polyphonic Music 900–1600*, 179; Robert Davis Reynolds, 'Evolution of Notational Practices in Manuscripts Written between 1400–1450' (Ph.D. diss., Ohio State University, 1974), 256. Bank silently emends the sign in question; see Bank, *Tactus, Tempo and Notation in Mensural Music from the 13th to the 17th Century*, 135.

TABLE 2. *Meaning of mensuration signs in Tant plus vous voy*

|        |                        |           |                                   |
|--------|------------------------|-----------|-----------------------------------|
| ⊙      | ↓ ↓ ↓ ↓ ↓              |           | Cancels $\Phi$ and $\Phi$         |
| 2      | ◇ ◇ ◇                  | (◇ = ↓ ↓) | Only used after ⊙ and $\Phi$      |
| $\Phi$ | □ □ □                  | (□ = ◇ ◇) | Only used after ⊙ and $\Phi$      |
| $\Phi$ | ◇ ◇ ◇ ◇ ◇              | (◇ = ↓ ↓) | Only used after $\Phi$            |
| $\Phi$ | ◇ ◇ ◇ ◇ ◇              | (◇ = ↓ ↓) | Only used after ⊙ and ⊙           |
| $\Phi$ | ■ ■ ■                  | (■ = ↓ ↓) | Only used after $\Phi$ and $\Phi$ |
| ○      | ◇ ◇ ◇                  | (◇ = ↓ ↓) | Cancels $\Phi$                    |
| ⊙      | ◇ ◇ (□ = ◇ ◇; ◇ = ↓ ↓) |           | Changes breve length              |

portional signatures practised in late fourteenth-century notation still has an important role in the notation of the early fifteenth century.

The use of mensuration signs in a second chanson in Oxford 213, the anonymous *Tant plus vous voy* (fo. 124<sup>r</sup>), is anomalous compared to notational process in the bulk of surviving early fifteenth-century sources. The meaning of signs in this composition is shown in the Table 2. Here the sign  $\Phi$  (drawn  $\Phi$  in this instance) indicates diminished (2:1) imperfect time with minor prolation and an implicit perfect mode. This particular meaning of the sign appears to be connected with the unusual practice of using ⊙ to indicate simple imperfect time with minor prolation that is discussed further below. Another sign of interest to the present discussion,  $\Phi$  appears commensurate with  $\Phi$ , although once again context invites caution.  $\Phi$  only occurs after  $\Phi$  (which is always associated with coloration),  $\Phi$  after ⊙ or ⊙. While it is possible that a lost canon may have once explained the meaning of signs in *Tant plus vous voy*, evidence furnished here and elsewhere suggests that the notational record of this chanson instead witnesses a rare set of notational practices observable in sources of the late fourteenth and fifteenth centuries.<sup>50</sup>

It is also evident that ⊙ was used at various times and places to indicate basic imperfect time with minor prolation without any proportional significance.<sup>51</sup> The use of the stroke with this sign in the two sources from the third and fourth decades of the fifteenth century in a passage of music that is clearly in imperfect time with minor prolation may indeed represent—as Bent surmises—continued experimentation with the older meaning of this sign in conjunction with the practice of adding a non-proportional stroke to successive mensuration signs to indicate new sections or changes in texture, but not necessarily proportional or tempo relationships. But when it comes to the simultaneous use of  $\Phi$ —and even though I take Bent's point that the stroke may indicate inequality across mensurations<sup>52</sup>—it is clear that the stroke

<sup>50</sup> For the suggestion that a canon may have once accompanied *Tant plus vous voy* see Reynolds, 'Evolution of Notational Practices', 251–2, 308.

<sup>51</sup> Stoessel, 'The Interpretation of Unusual Mensuration Signs in the *Ars subtilior*', 187–92.

<sup>52</sup> Bent, 'The Use of Cut Signatures in Sacred Music by Binchois', 311. Bent's observations bring to mind a comparable use of  $\Phi$  in a manuscript examined below. Benet's Credo in the St Emmeram Codex uses this sign in all voices at the beginning of the *Et incarnatus est*, fos. 141<sup>v</sup>–142<sup>r</sup>. See the facsimile *Clm 14274 der Bayerische Staatsbibliothek München*, ed. Bayerische Staatsbibliothek and Lorenz Welker, with Ian Rumbold and Peter Wright (Elementa Musicae, 2; Wiesbaden, 2006). The English source Oxford, Bodleian Library, MS Add. C 87\*, fo. 221<sup>r</sup> (copied c.1450) uses ⊙ at the beginning of this section instead. The composition is also transmitted in Trent 93 (fos. 258<sup>v</sup>–259<sup>r</sup>) and Trent 90 (fos. 141<sup>v</sup>–142<sup>r</sup>). Bent elsewhere emphasizes the absence of cut signs in English sources and the frequent conversion of ⊙ to  $\Phi$  by Continental scribes not to indicate duple diminution but to indicate a 4:3 relation



applied to  $\ominus$  in the *Missa L'Ardant desir* signals a precise *proportional* inequality in addition to the proportional significance of  $\ominus$ .<sup>53</sup>

Another unusual sign encountered in the CS 51 *Confiteor* is  $\odot$ . This sign was also long-lived, although its meaning varies in sources.<sup>54</sup> Table 3 assembles known examples of this sign from fifteenth-century musical sources used alone or combined with an arabic numeral or coloration. The two earliest instances occur in collections compiled up to thirty or forty years after some of the works they contain were composed, and so raise questions about the level of scribal intervention in subsequent copies. The first occurs in the *ars subtilior* ballade *Né Genevieve* by Johannes Cuvelier, transmitted solely in Codex Chantilly. There the sign specifies that the 'reverse dotted semicircle' indicates a 3:2 proportion (see Table 3).<sup>55</sup> This proportion applies at the minim level since perfect semibreves are required after the sign equivalent to imperfect semibreves in the preceding imperfect time. The application of the proportion results in imperfect time with major prolation diminished proportionally in relation to the previous imperfect time with minor prolation. Another early example (see Table 3)

between imperfect and perfect time with minor prolation; see *Fifteenth-Century Liturgical Music*, ii: *Four Anonymous Masses*, ed. Margaret Bent (Early English Church Music, 22; London, 1979), pp. x, xiv and 170. The St Emmeram  $\Phi$  appears to harbour a redundancy through the use of a proportionally significant sign combined with a stroke to indicate minim inequality, although the use of the stroke may not be entirely redundant in the light of the ambiguous nature of  $\ominus$  in the early 15th c. (see note above). A well-known recording of Benet's Credo satisfactorily interprets the relationship of semibreves governed by  $\Phi$  to semibreves in the previous perfect time with minor prolation section in a 4:3 proportion, as heard in *The Call of the Phoenix*, performed by The Orlando Consort (Harmonia Mundi USA HMU 907297, 2002), track 6. For the published edition, see *Fifteenth-Century Liturgical Music*, iv: *Early Masses and Mass Pairs*, ed. Gareth Curtis (Early English Church Music, 42; London, 2001), 119–24. Curtis's edition closely follows the Oxford source cited above.

<sup>53</sup> Busse Berger, *Mensuration and Proportion Signs*, 177 n. 50, reports that ch. 6 of the mid-century anonymous *Tractatus de musica plana et mensurabili* (Anonymous XI) and Adam von Fulda (1490) both state that  $\Phi$  indicates 5:3; ch. 7 of Anonymous XI states a 16:6 meaning for the same sign, thereby providing evidence for the composite nature of this treatise; see Richard J. Wingell, 'Anonymous XI (CS III): An Edition, Translation and Commentary' (Ph.D. diss., University of Southern California, 1973), i. 167 (5:4) and 172 (16:6), and *Scriptorum de Musica Medii Aevii: novam seriem a Gerbertina alteram collegit nunquam primum*, ed. Ch. E. de Coussemaker (Paris, 1864–76), iii. 473 and 475; Adam von Fulda, *Musica*, Part 4, cap. 8; *Scriptores ecclesiastici de musica sacra potissimum*, ed. Martin Gerbert (St. Blaise, 1784), iii. 380. Guilielmus Monachus reports that the same sign is 'per medium' of  $\ominus$ , a proposition made difficult by his equating the latter sign with  $\Phi$ ; *De preceptis artis musicae*, cap. 7, *Tractatus de cantu organico* (Seay, 45). This relationship, abnormal for most of the 15th c., is only possible at the end of the century when some theorists observe breve equivalence between  $\ominus$  and  $\odot$ ; see Busse Berger, *Mensuration and Proportion Signs*, 54–5.

<sup>54</sup> On the 15th-c. theoretical definitions of  $\odot$  by mid-century Anonymous XI (5:4), Johannes Hothby (3:4) before 1487, and end-of-the-century Adam von Fulda (5:4) see Busse Berger, *Mensuration and Proportion Signs*, 177 nn. 50–1. The author of the *Ars et practica cantus figurativi* (1483) also attributes a 5:4 meaning to this sign; see *Anonymi Tractatus de cantu figurativo et de contrapuncto (c. 1430–1520)*, ed. Christian Meyer (Corpus scriptorum de musica, 41; s.l., 1997), 36–47 at 41. Guilielmus Monachus noted that that this sign was 'half of the preceding sign [ $\odot$ ], since all signs drawn reversed are half of their antecedent. That sign contains the same mensural organization as the preceding sign, but it is diminished by a half part, that is a *maxima* is taken for a long and a long for a breve' ('Signum istud est medium praecedentis signi, cum omne signum reverse factum sit medium sui antecedentis. Istud enim signum eundem numerum tenet, sicut signum praecedens, sed diminutum de media parte, hoc est, maxima accipitur pro longa et longa pro brevi'); *De preceptis artis musicae compendiosus libellus*, cap. 7 (Seay, 46). In 1498, Gaffurius follows Tinctoris, concluding that the use of this sign to indicate a 3:2 proportion is an error ('quod mea sententia erroneum existimo'); see Franchinus Gaffurius, *Practica musice* (Milan, 1496; rpr. Bibliotheca musica Bononiensis, 6; Bologna, 1972), bk. 4, cap. 5, sig. ggv<sup>x</sup>. The same sign is found much later in Thomas Morley's well-known treatise: Thomas Morley, *A Plaine and easie Introduction to Practicall Musicke* (London, 1597; repr. The English Experience, 207; New York, 1969), 25, 41, and 54.

<sup>55</sup> Published editions of this piece are: *French Secular Compositions of the Fourteenth Century*, ed. Apel, 18; *French Secular Music: Manuscript Chantilly Musée Condé 564, Second Part*, ed. Gordon Kay Greene (Polyphonic Music of the Fourteenth Century, 19; Monaco, 1982), no. 63. Neither of these monumental editions provides satisfactory transcriptions of this piece in terms of presentation in modern notation and readings adopted from the manuscript. A new edition occurs in Stoessel, 'The Captive Scribe', ii. 262–7, critical notes on p. 407.



TABLE 3. *Examples of ☉ in fifteenth-century sources (ordered chronologically)*

| Work   | Source and date  | Use                                   | Meaning   |
|--|--|---------------------------------------|---|
| Johannes Cuvelier,<br><i>Ne Genevie</i>              | Codex Chantilly, fo. 41 <sup>v</sup> ;<br>c.1415   | ☉ with canon (black notation)         | 3:2 in relation to C as required by canon; major prolation  |
| Byttering, Gloria<br>(‘miserere nobis’)              | Old Hall MS, fos. 13 <sup>v</sup> –14 <sup>r</sup> ;<br>c.1410–15, first layer (Aosta 15, fos. 242 <sup>v</sup> –244 <sup>r</sup> )  | ☉ <sub>6</sub> (black notation)       | 3:4 in relation to C, perfect minor time implied  |
| <i>Ave verum corpus</i>                              | St Emmeram Codex, fos. 29 <sup>v</sup> –30 <sup>r</sup> ; c.1435–9   | ☉ (black notation)                    | Imperfect major time  |
| Lionel Power (?),<br>Agnus dei                       | Aosta 15, fos. 245 <sup>v</sup> –246 <sup>r</sup> ;<br>c.1440 (relevant voice not transmitted in Old Hall MS, fo. 107 <sup>r</sup> ) | ☉ + black coloration (white notation) | 3:2, perfect minor time implied   |
| Sanctus of <i>Missa Hec dies</i>                     | Lucca Choirbook, fos. 40.8 <sup>v</sup> –40.9 <sup>r</sup> ; 1462–4  | ☉ + black coloration (white notation) | Following ☉, sign forces imperfect major time for black coloration; coloration proportions; redundant |
| Barbingant?,<br><i>Domine fili unigenite</i> (Credo) | San Pietro B 80, fos. 41 <sup>v</sup> –42 <sup>r</sup> ; 1474–5 (different notation in Trent 89, fo. 308 <sup>v</sup> )              | ☉ + black coloration (white notation) | 3:2 semibreves following ☉, perfect minor time implied  |
| <i>Confiteor, Missa L’Ardant desir</i>               | CS 51, fo. 98 <sup>v</sup> ; c.1475  | ☉ + black coloration (white notation) | 2:1 semibreves produced by reversed sign 4:3 × dot 3:2  |

occurs in the Cantus for the ‘Qui tollis’ of Byttering’s Gloria in the Old Hall Manuscript (London, British Library, Add. MS 57950). Here the sign in question appears as a composite signature ☉ over 6 with black notation. The figure 6 indicates, as elsewhere in Old Hall, a 3:4 proportion in relation to the preceding imperfect time with minor prolation. The sign ☉ appears to govern the following augmented notes at the mode and time level, rather than the time and prolation level as ☉ does.<sup>56</sup> A dot of division between two semibreves signals that perfect breves are required.

Yet another meaning for this sign occurs in the anonymous *Ave verum corpus* found in the St Emmeram Codex that Hermann Pötzlinger compiled c.1439–44 at Regensburg.<sup>57</sup>

<sup>56</sup> I warmly thank Margaret Bent for drawing my attention to this sign in the Old Hall Manuscript; see Margaret Bent, ‘The Old Hall Manuscript: A Paleographical Study’ (Ph.D. diss., University of Cambridge, 1968), 235–6. Also see Andrew Hughes, ‘Mensuration and Proportion in Early Fifteenth Century English Music’, *Acta Musicologica*, 37 (1965), 48–61 at 58. High-resolution colour images of the Old Hall manuscript can be viewed on DIAMM. On the dating of the first and second layers in the Old Hall Manuscript, see Margaret Bent, ‘Sources of the Old Hall Music’, *Proceedings of the Royal Musical Association*, 94 (1967), 19–35; Roger Bowers, ‘Some Observations on the Life and Career of Lionel Power’, *Proceedings of the Royal Musical Association*, 102 (1975), 103–27 at 109–10.

<sup>57</sup> The dating of the earliest layer of Munich, Bayerische Staatsbibliothek, Clm. 14274, in which *Ave verum corpus* occurs, might be as early as 1433, although the compilation of the manuscript probably occurred between 1439 and 1444; see Ian Rumbold and Peter Wright, *Hermann Pötzlinger’s Music Book: The St Emmeram Codex and its Contexts* (Woodbridge, 2009), 82–3 *et passim*.

Here the sign indicates imperfect time with major prolation. All voices begin with ☉ and change simultaneously first to ○ and then to ◐ in the following sections of this setting. Possible evidence for a proportional significance for the sign ☉ occurs in the form of redundant notes at the beginning of the Tenor and again at the beginning of the third section. In both cases the sign ☉ appears superimposed over a minim *b'* paired with a semibreve rest. But these durations and pitch are not part of the contrapuntal and mensural fabric of this piece. Instead this intrinsic, but redundant, sign complex might suggest a proportional relationship with the normative values of notes in the following ○ section. On the other hand, the second Cantus consistently uses ☉ at the beginning of sections governed by the reversed sign in the other voices, suggesting that the scribe is not at ease with the notational conventions transmitted in this piece of music.<sup>58</sup>

Further evidence for the currency of a particular meaning of ☉ among turn-of-the-fifteenth-century English composers occurs in an Agnus dei in the Aosta manuscript (fos. 245<sup>v</sup>–246<sup>r</sup>), compiled around 1440, where it is used with coloration to indicate a 3:2 proportion at the minim.<sup>59</sup> When discussing its transmission in the Old Hall manuscript (fo. 107<sup>r</sup>), Bent attributes this piece to Lionel Power (c.1375/80–1445).<sup>60</sup> Again the sign appears to govern mode and time; minor prolation remains in effect. The Cantus, in which this sign occurs, unfortunately does not survive in the earlier concordance in the Old Hall Manuscript.

The meaning of ☉ in Power's Agnus dei is identical to that found in the *Domine fili unigenite* of the *Missa sine nomine* attributed to Barbingant and transmitted in manuscript San Pietro B 80, fos. 41<sup>v</sup>–42<sup>r</sup>. Christopher Reynolds concluded that the bulk of the manuscript (which includes the *Missa sine nomine*) was copied 1474–5 for the choir of San Pietro, Rome.<sup>61</sup> In SP B 80, the passage preceded by ☉ towards the end of the Cantus of the *Domine fili unigenite* (fo. 41<sup>v</sup>, stave 3) is written entirely in black coloration and contains dotted black semibreves equivalent to three black minims. Importantly, all values in this passage are imperfect since the alteration of semibreve pairs before a breve is not possible. We might assume that use of ☉ in conjunction with coloration ensures that the 3:2 proportion applies at all levels of mensuration (breves, semibreves, and minims) formerly governed by ☉. There is, however, a problem with this assumption. In the corresponding portion of the Contratenor (fo. 42<sup>r</sup>, stave 5), ☉ is absent and coloration alone suffices to indicate the same 3:2 proportion. Trent 89 (MS 1376) transmits the same mass, but the equivalent passage in the Cantus is not preceded by ☉ and is written in a mixture of black coloration and dotted white perfect semibreves as shown in Pl. 3.<sup>62</sup> This earlier transmission is also slightly problematic in that it uses both dotted black and dotted white semibreves to indicate the same duration, a situation that possibly reflects on-the-fly scribal revision. It is possible that the Trent scribe's exemplar more closely resembled SP B 80, although we cannot be sure. On

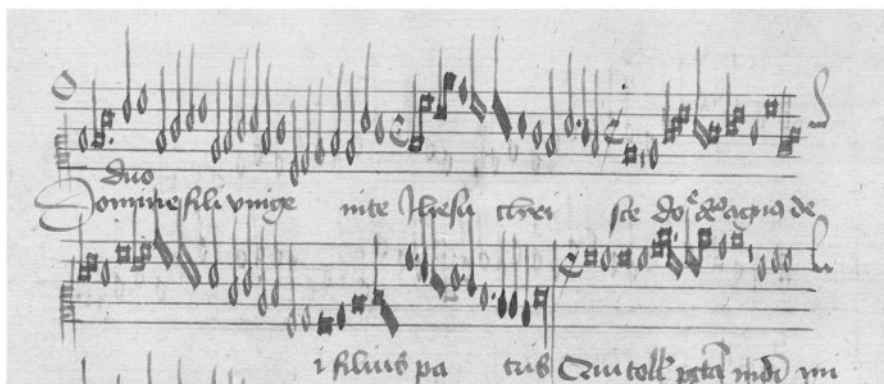
<sup>58</sup> See e.g. the sixth stave on fo. 29<sup>v</sup> in which the regular imperfect major sign cancels a duple proportion (indicated by 2), or at the end of the seventh stave where the Cantus II voices use the regular sign and the other two voices use the reversed sign simultaneously. In the final section 'miserere nobis', Cantus I uses ☉ while the other voices use ○.

<sup>59</sup> Bent, 'The Old Hall Manuscript', 235.

<sup>60</sup> Ibid. 364. On Power's dates, see Bowers, 'Some Observations', 104, 120.

<sup>61</sup> Christopher A. Reynolds, 'The Origins of San Pietro B 80 and the Development of Roman Sacred Repertory', *Early Music History*, 1 (1981), 257–304; id., *Papal Patronage and the Music of St Peter's 1380–1513* (Berkeley, 1995), 80–111, esp. 89–98.

<sup>62</sup> Facsimile editions: *Codex Tridentinus 89* (Rome, 1969); *Vatican City, Biblioteca Apostolica Vaticana, San Pietro B 80*, ed. Christopher A. Reynolds (*Renaissance Music in Facsimile* 23; New York and London, 1986); also see note 29 above.



PL. 3. Use of ⊖ in Barbingant's *Missa sine nomine*, Trent 89, fo. 308<sup>v</sup>. Used with the consent of the Archivio fotografico, Castello del Buonconsiglio, Monumenti e collezioni provinciali. Further reproduction prohibited

the other hand, the status of the ⊖ in SP B 80 is equally questionable in the light of its absence in that transmission's Contratenor where the same proportional effect is required.

Johannes Tinctoris objected repeatedly to the use of mensuration signs to indicate proportions, singling out Barbingant's *Domine fili unigenite* for special criticism.<sup>63</sup> That Tinctoris knew a reading of the *Domine* identical to the version transmitted in SP B80 rather than a reading using coloration alone, like that in Trent 89, is suggested by the passage in his *Proportionale musices* where he criticizes Barbingant for using ⊖ to indicate a 3:2 proportion 'in his *Et in terra* of the first authentic mixed mode'.<sup>64</sup> Had Tinctoris known the Trent 89 reading of Barbingant's *Missa sine nomine*, it is doubtful whether he would have censured Barbingant since the theorist considers coloration suitable for notating a 3:2 proportion in imperfect time with minor prolation.<sup>65</sup>

A ⊖ also occurs in a *Sanctus* of the anonymous *Missa Hec dies* in the Lucca Choirbook (see Table 3). Again its meaning differs from those already encountered above.<sup>66</sup> All voices begin with imperfect time with minor prolation in white notation (the Tenor and Contratenor do not enter until the tenth breve, the Contratenor with a preceding 'upbeat'). ⊖ occurs twice subsequently in the Alto, the first time just over halfway through the statement of the second 'Sanctus' and the next time in the 'Pleni sunt celi

<sup>63</sup> See e.g. Tinctoris, *Proportionale musices*, bk. 3, cap. 2; *Opera theoretica IIa*, ed. Seay, 47–8.

<sup>64</sup> See ibid. 48. For the attribution of the *Missa sine nomine* to Barbingant based on Tinctoris' statement and a discussion of the notation of the two transmissions of its *Domine fili unigenite*, see Charles Hamm, 'Another Barbingant Mass', in Gustave Reese and Robert J. Snow (eds.), *Essays in Musicology: In Honor of Dragan Plamenac on his 70th Birthday* (Pittsburgh, 1969), 83–90.

<sup>65</sup> See Tinctoris, *Proportionale musices*, bk. 1, cap. 6; *Opera theoretica IIa*, ed. Seay, 23–4. In a private communication, 23 Apr. 2010, Bonnie Blackburn kindly noted the following. The same usage occurs in another *Domine fili unigenite* in an anonymous Gloria in Trent 90, fo. 445<sup>v</sup>. Marco Gozzi, in his *Il manoscritto Trento, Museo provinciale d'arte, cod. 1377 (Tr 90) con un'analisi del repertorio non derivato da Tr 93* (Cremona, 1992), 93, discovered that this reading is concordant with an example in Tinctoris's *Proportionale* (ed. Seay, p. 47), where the implied author is Puylois. While Tinctoris gives ⊖ in the Discantus and ⊖ in the Tenor, Trent 90 has ⊖ in the Discantus and ⊖ in the Tenor.

<sup>66</sup> For an edition of the *Sanctus*, see Reinhard Strohm, *Music in Late Medieval Bruges* (Oxford, 1985), 226–35. Facsimile: *The Lucca Choirbook: Lucca, Archivio di Stato, MS 238; Lucca Archivio Arcivescovile, MS 97; Pisa, Archivio Arcivescovile, Biblioteca Maffi, Cartella 11/III*, ed. Reinhard Strohm (Late Medieval and Early Renaissance Music in Facsimile, 2; Chicago, 2008).

et terra gloria tua'. The second passage is a duo, but the first instance of ☉ occurs in the four-part texture, suggesting that the sign is not used to indicate changes in texture. Three white semibreves after the first instance of the sign still need to be read in minor prolation, but the paired black semibreve and semibreve rest following the second occurrence of the same sign need to be read in major prolation. Minims are equivalent across both mensurations. Simultaneous with the first passage governed by ☉ in the Alto, the Cantus uses the sign ♪ and white notation. The minims governed by this sign are equivalent both to the minims in ○ and to the minims in the ☉ passage sounding at the same time in the Alto, while the semibreves are again perfect. When ☉ occurs for a second time in the Alto, the Cantus uses the same sign instead of ♪. Reinhard Strohm is correct in concluding that 'these signs have the same effect and are not strictly correct or even necessary'.<sup>67</sup>

It seems that the meaning of ☉ varied over time and from place to place. While we might reasonably expect exchanges between English and Continental composers (especially in the early fifteenth century, when several English composers may have been variously present on the Continent) and increases in the dispersal of English compositions to the Continent through centres like Cambrai towards the middle of the century, there is once again a significant paradigm shift from black to white notation that necessitated a scribal presence of mind in the light of adaptations necessary for transforming more complex examples of older black notation into white notation. Add to this the shift from minim-equivalent notation to semibreve notation and our still incomplete understanding of augmented notation in Continental and English sources, and we are presented with a veritable quagmire of notational adaptation. Cuvelier's use of ☉ is uncomplicated in the sense that its proportional meaning is specified by a canon. That major prolation, however, is implied is significant. In Lucca, the sign has no proportional significance but appears to imply that the following black notes are arranged in imperfect time with minor prolation. White semibreves after the sign are equivalent to those governed by ○, although they represent a type of reverse coloration in the context of ☉. A similar observation applies for the same sign's meaning in the St Emmeram Codex. Conversely, passages governed by ☉ in conjunction with coloration or a proportional numeral in Old Hall, Aosta, and San Pietro B 80 are always perfect time with minor prolation. This represents a shift from the proportioning of minims in Cuvelier's case to a more pervasive and—in the case of the Lucca Choirbook—sometimes mischievous breve equivalence. Yet in CS 51 we perceive a partial disjunction between the use of this sign in the *Missa L'Ardant desir* and its earlier instances. Here the sign is dependent on the 4:3 meaning of ☉; the dot in combination with black coloration brings about a transformation of the imperfect breve of ☉ into a perfect breve (but in both cases with minor prolation) after ☉. The result is a 2:1 relationship between black minims in ☉ and white minims in ○. Strictly speaking, normal and coloured minims cannot be proportioned to each other since in the Euclidean tradition proportions can only be made of like things. The addition of coloration in passages of ☉ is therefore integral to the incidental relationship between minims across both mensurations; the sign alone cannot produce a 2:1 proportion in relation to white minims in ○.

The preceding survey of unusual mensuration signs in sources from the first seventy-five years of the fifteenth century has been conducted as an empirical investiga-

<sup>67</sup> Strohm, *Music in Late Medieval Bruges*, 235.

tion of the meaning or significance of each sign on a case-by-case basis within the context of the notated musical composition in which it is found. While I have endeavoured to trace the use of particular signs over time, one thing has become obvious: the more unusual a sign, and the more dispersed in its use, the more likely it is that its meaning is only vaguely connected with signs resembling it. To take this conclusion a step further: a sign's apparent resemblance to other instances sometimes obscures what are different meanings residing in notational practice that occurred over time and varied from place to place. The centrepiece of this article has been my discussion of unusual signs (which includes double signatures) observed in the *Confiteor* of the *Missa L'Ardant* and the presence of signs of a similar appearance in earlier sources. In the case of earlier fifteenth-century sources, these unusual signs are only a few of a number of notational devices used to facilitate proportional relationships between voices in polymetric music, and to adapt older black notational practices to white notation during the first forty years of the fifteenth century. But by the time we arrive at the *Missa L'Ardant desir*, white notation had been well and truly entrenched as a scribal practice for at least the same amount of time that it took for black notation to fade from use. In that time, composers, scribes, and music theorists (discussed here only sparingly above due to my methodological focus) had expended considerable effort in refining, simplifying, and to some extent standardizing notational processes such that proportional mensuration signs were deemed superfluous. The preservation of these signs in CS 51 (preservation of an exemplar's reading must be the case since the notational device is unique and exceptional therein) in the face of what might amount to several decades of notational revision, reinforces the symbolic and numerological relationship between the music, music notation, and theological text at this point of the mass. But symbols are not always transparent, and the use of these old mensuration signs contributes to ensuring that the symbolic content of this section of music is only apparent to experienced singers (and scribes) of this music. Indeed, as we have seen, the double signatures used in CS 51 actually obscure simple mensural relationships at a notational level, but they also depend on new mensural concepts, such as perfect-imperfect semibreve equivalence, that indicate at one level a discontinuity in the meaning of this type of signature when compared with early instances.

Moving beyond particulars, in this study I hope to have offered some salutary examples in which any attempt to connect the dots of notational practice over the space of three-quarters of a century and over a geographical expanse that extends from England to Central Europe to southern Italy has proved impossible save for illustrating visual semblances. Notational meaning varies from place to place and over time. Thus, while studies like that by Fallows cited at the beginning of this article have been successful in illustrating stylistic echoes of the *ars subtilior* in musical compositions across the course of the fifteenth century, this study shows that the same cannot be said in regard to musical notation. The very lack of continuities in notational meaning may indicate that stylistic semblances as the seat of common musical meanings also need to be treated with equal caution. As a technology of writing, musical notation depends very much on the culture that uses it for meaning. We have seen instances where the meaning of notation, insofar as it concerns mensuration signs, varies from one musical culture to another, or at least a subsequent development of that musical culture. The potential for the change of meaning in musical notation must also be considered a possibility for the music itself when it comes to stylistic gestures like those discussed by Fallows. Surely, it cannot be assumed that those musical gestures have the same meaning as articulated culturally at either end of the fifteenth century. Such a



premiss needs further investigation elsewhere but it suffices here to observe that proportionality in the *Confiteor* of the *Missa L'Ardant desir* symbolizes excess, even sinfulness. On the other hand, no such associations exist in the expressions of musical exuberance that one finds in the music of the *ars subtilior*, although proportionality can be used in an equally symbolic way as in, for example, Johannes Olivier's *Si c'on cy gist mon cuer* (Codex Chantilly, fo. 31<sup>v</sup>). There musical proportions correspond to the metaphorical division of the lover's heart into halves, thirds, and quarters.<sup>68</sup> This brief example suggests it would be an error to assume that proportionality and, by extension, proportional notation is always indicative of the same meaning in late medieval music. Rather, the context of each composition offers up very different readings. Although the methodology of this article has been empirical rather than critical in the sense of cultural history, its intent is to bring into focus the necessity of notational studies to proceed within a critical framework that begins to unravel the elaborate relationships of this technology of writing with the musical cultures that used it. It serves as an invitation to delve, for example, into the Geertzian webs of significance, and most importantly to recognize the existence of cultural paradigms in music notation that contribute to our overall understanding of past musical creativity and practice.

## ABSTRACT

A number of unusual signs appear in the notation of west European polyphonic music in manuscripts from the first seventy-five years of the fifteenth century. Though they resemble mensuration signs, these signs behave as signatures, and are used to indicate proportions and other tempo relationships in music. Beginning with an examination of 'double signatures' in the *Missa L'Ardant desir* from Vatican City, Biblioteca Apostolica Vaticana, Cappella Sistina 51, this study identifies earlier examples of rare and unusual signs in fifteenth-century sources. While the superficial resemblance of these signs across sources outwardly suggests a coherent and continuous history of notational meaning, close empirical observation of notational practice instead presents a picture of semantic discontinuity. Many unusual signs are associated with proportional effects in music. It is clear that similar notational devices and proportional effects symbolize radically different ideas in the texts of vocal compositions. This suggests that over time and place these unusual signs differ in their symbolic and therefore cultural associations. This state of epistemic discontinuity requires scholars to reassess any argument proposing the continuation of flamboyant musical styles first observed in the turn of fifteenth-century *ars subtilior* into the later fifteenth and sixteenth centuries.

<sup>68</sup> See Laurie Koehler, 'Subtilitas in Musica: A Re-examination of Johannes Oliver's "Si con cy gist"', *Musica Disciplina*, 36 (1982), 95–118; Gilles Dulong, 'Canons, palindromes musicaux et textes poétiques dans les chansons de l'Ars nova', in Schiltz and Blackburn (eds.), *Canons and Canonic Techniques*, 61–82, esp. 70–6. Neither mensuration signs nor arabic numerals are used to indicate proportions in Olivier's *Si c'on cy gist*. Instead, this ballade's deceptively simple notation is subject to various proportions referred to in the sung text. I am grateful to Dr Dulong for acknowledging our independent discovery of a new reading in this ballade's text; see Dulong, 'Canons, palindromes musicaux et textes poétiques', 70; Stoessel, 'The Captive Scribe', ii. 316–17. For discussions of similar devices see Ursula Günther, 'Fourteenth-Century Music with Texts Revealing Performance Practice', in Stanley Boorman (ed.), *Studies in the Performance of Late Medieval Music* (Cambridge, 1983), 253–70; Virginia Newes, 'Mensural Virtuosity in Non-Fugal Canons c. 1350 to 1450', in Schiltz and Blackburn (eds.), *Canons and Canonic Techniques*, 19–46, esp. 38 concerning Ciconia's *La ray au soleyl*; Theodor Dumitrescu, 'Constructing a Canonic Pitch Spiral: The Case of *Salve Radix*', *ibid.* 141–70, esp. 63.

# APPENDIX

## Irregular proportional signs specified by canon in early fifteenth-century sources

| Work and source   | Affects    | Prescribed meanings   | Canon   |
|---|------------|---|---|
| <i>Je prens d'amour noriture</i><br>Turin J.II.9, fo. 154 <sup>r</sup>    | minims     | ⊙ = 2:3, ⊕ = 10:3, ○ = 5:2, 2 = 3:4,<br>3 = 5:3, 4 = 4:1, 6 = 7:2, 8 = 7:3, 9 = 9:8 | <i>Canon Ad figuram 9<sup>am</sup> in proporcionem epogdoa, ad 4<sup>am</sup> in quadrupla, ad 3<sup>am</sup> in superbiparcienstercias, ad cemicirculum in dupla hemiola, ad 6<sup>am</sup> in tripla hemiola, a[d] circulum cum puncto in supsexquialtera, ad 8<sup>am</sup> in dupla epitrita, ad circulum duplum in tripla epitrita, et ad figuram 2<sup>am</sup> in supsexquitercia, residuum uero sicut iacet</i> (Rule: [it is] in 9:8 proportion at the numeral 9, in 4:1 proportion at 4, in 5:3 at 3, in 5:2 at the semicircle, in 7:2 at 6, in 2:3 at the dotted circle, in 7:3 at 8, in 10:3 at the double circle, in 3:4 at 2, the rest however as is) |
| Galiot, <i>Le sault perilleux</i><br>Codex Chantilly, fo. 37 <sup>r</sup> | semibreves | ⊕ = 3:2, ○ = 4:3, ⊕ = 9:8 (relative to<br>○)  | <i>In proportione epitriti ad semicirculum cantetur, ad circulum cum duobus punctis in proportione emiolij et ad circulum cum tribus in proportione epogdoy</i> (At the semicircle it is sung in 4:3 proportion, at the circle with two dots in 3:2 proportion, and at the circle with three dots in 9:8 proportion)  |
| Jo. Cuvelier, <i>Né Genevie</i><br>Codex Chantilly, fo. 41 <sup>v</sup>   | minims     | ⊙ = 3:2, ⊙ = 9:4, 2 = 2:1, 3 = 3:1  | <i>Canon balade &lt;cantus&gt; et contratenor cantetur ad semicirculum reuersum punctuatum in proporcione sesquialtera (MS: -am), ad figuram binariam in proporcione dupla, ad circulum punctuatum in proporcione dupla sesquiquarta et ad figuram trinariam in proporcione tripla</i> (Rule: the <cantus> and contratenor of the ballade must be sung in 3:2 proportion at the dotted reversed semicircle, in 2:1 proportion at the numeral 2, in 9:4 proportion at the dotted circle and in 3:1 proportion at the numeral 3)  |
| <i>Puisque ame sui doucement</i><br>Turin J.II.9, fo. 107 <sup>r</sup>    | minims     | ○ = 3:2, ⊕ = 4:3, ⊕ = 2:1, ○ = 7:3,<br>4 = 5:2, 8 = 8:3                             | <i>Canon balade cantus et contratenor talis est. ad circulum trium punctorum in epitritum proportionem. Ad semicirculum retrogradum per emyoliam. Ad 8<sup>am</sup> figuram in duplasuperbipartienstercias, Ad circulum duplicem in dyapason. Ad figuram 4<sup>am</sup> in dupla emyolia et ad semicirculum in dupla sexquitercia, residuum vero sicut Jacet</i> (Rule: the cantus and contratenor of the ballade is as such: in 4:3 proportion at the thrice-dotted circle, in 3:2 at the reversed semicircle, in 3:8 at 8, in 2:1 at the double circle, in 5:2 at 4 and in 8:3 at the semicircle, the rest however as is)   |

(continued)

| Work and source  | Affects                     | Prescribed meanings   | Canon   |
|--|-----------------------------|---|---|
| Jehan Hasprois, <i>Puisque je sui fumeur</i><br>Codex Chantilly, fo. 34 <sup>v</sup>   | minims                      | ○ = 4:3, ○ + red coloration = 2:1   | <i>Ad semicirculum in proporcione sex qui tercia</i> [sic] <i>ubique et notule vacue balate in proporcione dupla cantetur. Et observatur modus perfectus in primo cursu balate</i> (Let it be sung in 4:3 proportion at the semicircle, and in 2:1 proportion wherever the ballade's notes are void. And perfect mode is observed in the first section of the ballade)  |
| Suzoy, <i>Pythagoras, Jabol et Orpheus</i><br>Boverio, fos. 4–5 <sup>v</sup> ; also Codex Chantilly, fo. 30 <sup>v</sup> and Paris 22069, fos. 153 <sup>r</sup> , 155 <sup>v</sup> , 156 <sup>v</sup> without mensuration signs* | minims                      | ○ = 2:1, (○ = 4:3)  | <i>Canon Iste ballate. videlicet quod semicirculum et sursum in proportione dupla et alique prout lacent tam in cantu quam in tenore.</i> (This ballade's rule: namely that the upwards-facing semicircle in the 2:1 proportion and anything else just as they lie both in the cantus and in the tenor)   |
| Jo. de Altecuria, <i>Se doit il plus en biaux</i><br>Codex Chantilly, fo. 15 <sup>v</sup>  | minims                      | ⊙ = 9:8, ⊙ ■ = ○ ■, (○ = 4:3)   | <i>Ad semicirculum cum duobus punctis in proportione sesquioctava cantatur</i> (It is sung in 9:8 proportion at the semicircle with two dots)   |
| <i>Se de mon mal delivre prestement</i><br>Turin J.II.9, fos. 124 <sup>v</sup> –125 <sup>r</sup>   | minims                      | ⊙ = 4:1, 3 = 3:2, 4 = 4:3   | <i>Canon ballade talis est ad circulum duplum in proporcione quadrupla. Ad figuram 4<sup>am</sup> in epitrita et ad figuram 3<sup>am</sup> in hemiola residuum uero sicut iacet</i> (The rule of the ballade is this: in 4:1 proportion at the double circle, in 4:3 at 4 and in 3:2 at 3, the rest however as is)  |
| <i>Sur toutes fleurs</i><br>Turin J.II.9, fo. 137 <sup>r</sup>   | minims                      | ⊙ = 2:3, ⊙ = 3:4, ⊙ = 7:3, ⊙ = 10:3,<br>3 = 3:2, 4 = 4:3, 5 = 5:2, 7 = 7:2, 9 = 9:8 | <i>Canon balade talis est Ad figuram 9<sup>am</sup> in proportione epogdoa, ad 3<sup>am</sup> in emiolia, ad 4<sup>am</sup> in epitrita, ad circulum cum puncto in subsexquialtera, ad circulum cum duobus punctis in supsexquitercia, ad figuram 5<sup>am</sup> in duplaemiolia, ad figuram 7<sup>am</sup> in tripla emiolia, ad circulum duplicem in dupla sexquitercia, ad circulum cum tribus punctis in tripla sexquitercia et ad figuram 2<sup>am</sup> in superbipartiens tercias, residuum sicut iacet</i> (The rule of this ballade is such: in 9:8 proportion at 9, in 3:2 at 3, in 4:3 at 4, in 2:3 at the dotted circle, in 3:4 at the twice-dotted circle, in 5:2 at 5, in 7:2 at 7, in 7:3 at the double circle, in 10:3 at the thrice-dotted circle and in 5:3 at 2, the rest as is) |
| Frater Johannes de Janua, <i>Une dame requis</i><br>Modena A, fo. 12 <sup>r</sup>  | minims, but<br>breves equal | ⊙ = ○ = 3:2, ⊙ = 9:4  | <i>Canon ballate: Tra[h]itur sub una omnis cantus huius mensura. Superius nota rubee proportio dupla; Qui tenet inferius sexquialtera putet</i> (Everything in this song is drawn out under the one measure. Red notes of the superius <indicate> a 2:1 proportion; he who holds the lower voice should reckon <red notes> in 3:2 proportion)   |

\*A newly discovered third transmission of *Pythagoras* is similar to the one in Codex Chantilly, using instructions written beneath the relevant portion of music to indicate it needs to be sung proportionally. Whereas Chantilly instructs the singer *Hec cantetur per medium usque ad signum*, Paris 22069 has *Hic cantetur per medium et prout. Iacet in quolibet usque ad signum*. See Mark Everist, 'A New Source for the Polyphony of the Ars subtilior: Paris, Bibliothèque nationale, nouvelles acquisitions françaises 22069', in Plumley and Stone (eds.), *A Late Medieval Songbook and its Context*, 281–301.